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VOL II

BULLETIN

NO. 1

IOWA STATE COLLEGE OF AGRICULTURE
AND MECHANIC ARTS

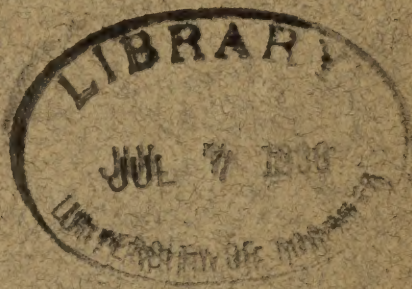
OCTOBER, 1912

Published Monthly by the Iowa State College of Agriculture and Mechanic Arts.
Entered as Second-class Matter October 26, 1905, at the Postoffice at
Ames, Iowa, under the Act of Congress, July 16, 1904.

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Engineering

BULLETIN NO. 28

Engineering Experiment Station



ROAD LEGISLATION AND ADMINISTRATION IN IOWA

By
John E. Brindley

AMES, IOWA

PURPOSE OF THE STATION

THE purpose of the Engineering Experiment Station is, first, to afford a service for the other industries of Iowa, similar to that afforded by the Agricultural Experiment Station to the agricultural industries; second, to assist the urban population of the state in solving the technical problems of urban life; third, to solve the purely engineering problems of the agricultural population and industries of the state.

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By

John E. Brindley, A. M., Ph. D.

Associate Professor Economics and Political Science

AMES, IOWA

ENGINEERING EXPERIMENT STATION

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CHAPTER I

HISTORICAL INTRODUCTION

Since the author of this bulletin has also written a volume on History of Road Legislation in Iowa, soon to be published by The State Historical Society of Iowa, it will not be necessary for this purpose to make more than a very brief historical statement. The book contains ten chapters, nine of the same being devoted to a thorough, historical survey of road legislation and administration from 1834, when Iowa was a part of the Territory of Michigan, down to the present time. This larger historical work may be obtained by writing to Professor B. F. Shambaugh at Iowa City, Iowa.

The value of such an historical study cannot be over-estimated because it forms the necessary and logical background of the present good road movement. Whether we like it or not, the future must be constructed largely on the basis of the past for the very obvious reason that the majority of practical men have no lamp by which their feet are guided except the lamp of experience. The student of historical research is thoroughly familiar with the fact that after all but very little is absolutely new; in other words, that real substantial reforms necessarily mean the reshaping of old institutions, constantly adapting the same to new and changing conditions on the inevitable basis of the laws of social evolution. In his study of road legislation and administration in Iowa, the author has discovered that the real fundamentals of the road question, including policies which many people think are new and revolutionary in character, may be traced back more than one-half a century and in some cases even to the beginning of the Territorial period of our history. In this connection, space will permit the mere suggestion of only three or four essential points.

First of all, it should be stated that, with the exception of the short period from July 1, 1851, to February 2, 1853, the civil township has exercised an important and substantial authority in road matters since 1839, when the Second Legislative Assembly authorized the optional establishment of township government in Iowa. This authority was exercised along two important lines: first, the actual supervision of road work, either directly through township officials or indirectly through sub-district road overseers; and second, the fiscal power represented by the levy of taxes for road purposes. The sphere of jurisdiction of the civil township from both standpoints tended to increase from 1839 to 1851, when the Code of that year practically blotted the township from the map by providing for a county road supervisor elected by the people, with authority to appoint deputy township road

masters. This highly centralized system, however, remained in force less than two years and by 1858 the power and authority of the township was practically supreme, having complete jurisdiction in the levy of taxes for road purposes from that date until 1884, when the county road fund was established.

Bearing these facts in mind, it may be reasonably assumed that the township will continue to exercise very substantial powers in the actual administration of at least local township roads, also retaining the right to levy a certain amount of taxes for this purpose. The maintenance of local dirt roads including the dragging of a large percentage of the public highways, will probably remain a township function for at least many years to come, a fact which should be recognized in promoting or drafting road and bridge legislation.

In the same manner the county, a unit of local government which forms a necessary connecting link between the civil township on the one hand and the state on the other, has also been clothed with large powers and authority in road matters since 1838, when Iowa became a separate Territory by act of Congress. From 1838 to 1851, the so called commissioner system of county government prevailed in Iowa. The county board, which consisted of three commissioners, had jurisdiction over the laying out and opening of public roads, levied taxes for road and bridge purposes and in fact exercised general supervision and control over roads and bridges.

The authority formerly exercised by three county commissioners was vested in the county judge from 1851 to 1860. During this period, however, the county judge was gradually deprived of his arbitrary powers, especially in financial matters, by the rapid growth of township government. The form of county government which prevailed from 1860 to 1870 was modeled on that of New York, the county board of supervisors consisting of representatives elected in the civil townships. In other words, the county board in reality, consisted of township officials, and the control of road finances was quite naturally exercised by township authority.

The present supervisor system, which is in fact the commissioner system, was created in 1870, and during this period there has been a gradual differentiation of township and county functions in the administration of the public highways. This has been brought about for the obvious reason that the present county board of supervisors is distinctly a county board, and not a board of officials elected in the civil townships. The powers and authority of this board have gradually developed since 1870, until, at the present time, it is generally recognized that the county road fund should be substantially increased, and that the board of supervisors should appoint a county engineer and exercise a

much larger sphere of control in the administration of the public highways. The tendency along this line has been very marked since 1884, when the county road fund was first established, which represented the fruit of a period of agitation that had culminated in the State Road Convention which met at Iowa City in March, 1883.

The desirability of paying road taxes in money, and the necessity of having a county bridge fund, date back to the Territorial period of Iowa history. With regard to the latter point, it is a significant fact that tax payers have quite generally recognized the necessity of having a larger taxable area than the civil township for the construction of bridges, or for any other similar improvement, involving relatively large expenditures of public money. The same considerations which prompted the early pioneers to establish a county bridge fund are at the basis of the present movement to enlarge the county road fund, and employ the same for the purchase of expensive machinery, the building of culverts and bridges, and the making of other permanent improvements, which require the expenditure of a larger sum of money than it is practicable or desirable to levy in one civil township.

In conclusion, it may be said that the necessity of having a township road master, or road superintendent, and also of providing some county official to give all his time to road work, were definitely formulated in the First State Road Convention, which met at Iowa City in 1883. At the same Convention, the importance of also having some definite system of state supervision was emphasized. Indeed, it may be said that the movement to create a State Highway Commission, which resulted in the important legislation of 1904, had its origin nearly a quarter of a century before that date. The township road superintendent finally authorized in 1902, the county road engineer which was placed on an optional basis in 1911, and the State Highway Commission itself, created in 1904, all rest on the solid foundation of historical development in our own state, as well as the successful practical experience of a large number of the remaining states of the Union. These considerations, in fact, the whole development of road legislation and administration, are presented with a wealth of historical detail in the History of Road Legislation in Iowa, already noted, which volume will soon be ready for distribution.

CHAPTER II

THE STATE HIGHWAY COMMISSION

1904-1912

The history of road legislation and administration in Iowa since 1904 has been in a very large measure the history of the State Highway Commission. Indeed, the Commission itself was the logical result of at least twenty years of agitation for good roads. Since 1884 public opinion had gradually crystalized in favor of a more systematic plan and definite purpose. More immediately, however, experimental work, beginning as early as 1902, conducted by the Division of Engineering of Iowa State College, contributed in no small degree to the enactment of the law creating the Commission. Certain experiments were made with reference: first, to the traction resistance on country roads; second, the amount of traffic over country roads in selected townships; and finally, the relation between the prices of agricultural products and the condition of the roads.

In the establishment of the State Highway Commission Dean A. Marston of the Division of Engineering and Dean C. F. Curtiss of the Division of Agriculture of Iowa State College are entitled to much credit. The question of creating a regular State Highway Department at the state capitol, and of providing an appropriation therefor, came before the General Assembly in 1904; but public sentiment was not ripe for such a radical step. Indeed, it soon became apparent that no separate department supported by a substantial appropriation could be established until public sentiment had been educated to the value of improved highways and the necessity of a more efficient system of road administration. At this juncture Representative Jones introduced a bill providing that the Iowa State College should act as a State Highway Commission. This measure, which did not carry an appropriation, was, after being slightly amended, passed by both Houses. The money for the support of the Commission was included in the regular college budget for experimental purposes, subject to the control of the Board of Trustees. The act as finally passed stipulated that the Iowa State College of Agriculture and The Mechanic Arts should serve as a State Highway Commission for Iowa, with the following powers and duties:

"1. To devise and adopt plans and systems of highway construction and maintenance, suited to the needs of the different counties of the state, and conduct demonstration in such highway construction, at least once each year at some suitable place, for the instruction of county supervisors, township trustees, superintendents, students of the college, and others.

"2. To disseminate information and instruction to county supervisors and other highway officers who make request; answer inquiries and advise such supervisors and officers on questions pertaining to highway improvements, construction and maintenance, and whenever the board of supervisors of a county adjudge that the public necessity requires a public demonstration of improved highway construction or maintenance in said county, and so request and agree to furnish necessary tools, help, and motive power for same, the commission shall furnish as soon as practicable thereafter, a trained and competent highway builder for such demonstration free to the county.

"3. To formulate reasonable conditions and regulations for public demonstrations; and to promulgate advisory rules and regulations for the repair and maintenance of highways.

"4. To keep a record of all the important operations of the highway commission, and report same to the governor at the close of each fiscal year."

In conformity with the provisions of the law, the Board of Trustees of the Iowa State College appointed the Deans of the Divisions of Engineering and Agriculture to serve the State in that capacity. Professor T. H. MacDonald was engaged as assistant to give all of his time to the work, and vigorous steps were taken to carry out the requirements of the statute.

In the meantime the movement in favor of good roads was greatly fostered by the organization of the Iowa Good Roads Association on August 15, 1903. The Association held its first meeting in Des Moines on February 24 and 25, 1904. Mr. T. G. Harper served as president and Mr. D. B. Lyons acted as secretary of the Association. In addition to the presentation of an instructive program a general plan was developed to promote good road legislation before the General Assembly.

Strangely enough an effort was made during the 1904 session of the General Assembly to take a backward step in road administration, through a bill, introduced by Mr. Chassell, providing for an amendment of the Anderson law which had authorized the consolidation of road districts on the basis of civil townships and the appointment of a township superintendent of roads. Mr. Chassell did not wish to repeal the Anderson law, but desired merely to make the adoption of the consolidated system optional with each civil township. He declared that tax payers ought to have the right to return to the old system of decentralized supervision and control if they so desired; in other words, they should be granted the privilege of enjoying local self government. The bill passed the House but was indefinitely postponed by the Senate.

Some amendments, however, were made to the general body of road legislation. Among other changes, the road tax was ex-

cluded from the consolidated levy of the county; and the law with reference to personal injuries caused by steam engines on the public highways was slightly amended. Finally, a law with reference to the construction of levees, ditches, drains, or changes of any natural water course across the public highway stipulated, first, that the actual cost of constructing the same across any public highway should be paid for by the township trustees out of the township road fund; and second, that "whenever the making of such improvement across any highway necessitates the building of a bridge over the same, the board of supervisors shall build and construct the same and pay all costs and expenses thereof out of the county bridge fund."

As an example of the somewhat complex character of the township and county principles of local government and the necessity of carefully distributing the tax burden in proportion to benefits received, it was further specified in the act that whenever any highway was beneficially affected by the construction of any improvements in such districts, "it shall be the duty of the commissioners appointed to classify and assess benefits, to determine and return in their report the amount of the benefits to such highway, and notice shall be served upon the clerk of the township in which said highway is located as provided in case of an individual property owner." Finally, the law specified that levees and drainage ditches should be so constructed as not to interfere materially with travel on the public highways.

It is not too much to say that the creation of the State Highway Commission marked an important turning point in the history of road legislation. Professor T. H. MacDonald, who had been employed as assistant in charge of good roads investigation for the Commission, was also made Secretary of the Iowa Good Roads Association. Plans were laid and work was commenced along strictly scientific lines. With the limited funds which the College Board of Trustees set apart for the purpose of road investigation it was possible to make only small beginnings.

In a bulletin entitled *The Good Roads Problem in Iowa*, dated June, 1905, Dean A. Marston reviewed the early labors of the Commission and outlined a constructive program of reform along the line of road legislation and administration. An effort was made to investigate road conditions in different sections of the State, and at that time road maps were prepared for about twelve counties. A preliminary investigation was also made regarding the amount of road funds raised in the different counties, and the methods and results of the expenditure for such purposes. This included a house to house canvass in typical townships. Finally, the investigating of road materials in Iowa was placed in the hands of Professor S. W. Beyer, whose work is now practically ready for publication.

It was estimated at the time that Iowa possessed about one hundred thousand miles of road—about twenty-five thousand miles of which was classed as main traveled roads. The relation between the price of farm produce and the condition of public highways, the amount of road taxes in the various funds, the subject of road drainage, and the use of the King Road Drag, road culverts, gravel and stone roads, and various other problems, were carefully discussed in this preliminary report. Dean Marston pointed out that the good roads problem in Iowa is how to spend the money already being raised so as to secure one-hundred-cents-on-the-dollar returns. He estimated that \$1,000,000 set aside annually for permanent stone or gravel roads would give the State over three hundred and fifty to five hundred miles of stone road or one thousand to fifteen hundred miles of gravel road.

The State Highway Commission also published a *Manual for Iowa Highway Officers* (dated June, 1905) which, being widely distributed, has rendered an important service to the cause of the good road movement along rational, scientific lines. In this *Manual* attention is called to the well known fact that the rapid development of railroads in recent years had attracted the attention of the people from the importance of public highways as agencies of transportation. In this connection it will be recalled that prior to the coming of the railroad the Territory and later the State had manifested great interest in and given substantial encouragement to the building of permanent roads including the chartering of private corporations to construct graded and plank roads. But in reference to the new agitation in favor of permanent highway improvement in 1905, Professor MacDonald was able to say: "At the inception of road building in the United States the leading men of the day championed the movement, and now the foremost men in every state have not only given its revival their approval, but have aided its advancement in every possible manner."

The *Manual for Highway Officers* contains, besides the data noted above, chapters dealing with the topography of Iowa, a brief historical statement regarding the subject of road legislation, with special emphasis on the Anderson road law enacted in 1902, and providing for the consolidation of road districts on the basis of civil townships, and the appointment of a township road superintendent, the work of the Commission itself, the importance of road dragging, and various other technical problems in highway engineering, including the location of roads, drainage, and the proper method of constructing permanent highways. It is alleged that the Anderson law was quite generally disregarded by township trustees. The law contemplated that a man filling that important position should devote his full time to the

work. "Some townships," according to the *Manual*, "have appointed several men to work on the roads and called them road superintendents, but this is merely a modification of the old many-district-system. It would be much better and would follow the requirements of the law to have one road superintendent for the township and let him have, if necessary, a number of assistants. The more the work is concentrated under one man and this man held responsible for the proper expenditure of the fund, the more economical will be the administration of the road funds, provided the proper man is selected in the first place."

In 1905 the Iowa Good Roads Association held its annual meeting at Ames on June 15 and 16, 1905. In his address of welcome, Dean Charles F. Curtiss suggested that "An inferior public road system imposes a heavy burden upon the people who live under it and it is only a prosperous and rich community that can afford to bear that burden." President T. G. Harper emphasized the fact that the road legislation of Iowa was the product of pioneer days. "In every department of business activity and commercial enterprise," said Mr. Harper, "we look around to find that we have gone ahead by leaps and bounds, but in the matter of common road making we find ourselves precisely where our pioneer fathers left us." In his opinion, there was no more important question, since the means of communication and transportation marked the high or low civilization of any people. Mr. Harper emphasized the importance of a larger unit of road administration. "I contend," he said, "that the unit of the road district should be the county instead of the township. There should be a county superintendent of roads and bridges, to work under the direction and jurisdiction of the county board of supervisors."

At this meeting of the Association a number of excellent addresses were made on practical subjects, including the questions of maintaining and repairing highways, road laws in Iowa, weeds, the work of the State Highway Commission, the question of public roads considered from the standpoint of the legislator, stone roads, and finally, the use of concrete for culverts and bridges. Attorney General Charles W. Mullan stated that in his opinion all road work should be let by contract to the lowest responsible bidder, and placed under the supervision of a competent road engineer. It was pointed out further that the old system of small road districts had produced two results: first, a wasteful expenditure of the public funds; and second, a lack of concerted action or spirit of coöperation in the building of a connected system of highways. "The abolishment of these small taxing districts," said Mr. Mullan, "and the creating of road districts co-extensive with the townships of the state, have given a broader field of action and to a large degree eliminated the local

penuriousness which so long predominated in the construction and repair of public highways.”

Hon. F. F. Jones of Villisca, author of the State Highway Commission law, delivered an able address in which he attributed the poor condition of the public highways to the lack of definite, scientific knowledge of the elementary principles of civil engineering. The result was a waste of energy, materials, and resources. The Iowa State College at Ames, he declared, was selected to head this important enterprise for the following reasons:

“First — Because it is continually demonstrating its interest in and its ability to serve the great agricultural interests of the state: and these interests are the greatest beneficiaries of improved roads.

“Second — Because the training, experience, ability, organization, facilities, and men, necessary to bring the largest results, are there ready to be thus employed, and without additional burden of expense.

“Third — Because the farmers, who are the county road-builders, have such confidence in this institution that they will more readily accept instruction and recommendations from it than from any other source.

“Fourth — Because the college officials, when approached in regard to the matter, very kindly consented to undertake and prosecute the work outlined should the bill become a law.”

The address made by E. W. Weeks of Guthrie Center, entitled *The Legislator and the Public Roads*, it noteworthy, because of the emphasis placed on the importance of a more centralized system of road administration — especially the necessity of creating the office of County Highway Commissioner. He believed that by pursuing this method, the township levy of four mills could be abolished and the county levy increased two mills, thereby saving two mills for the taxpayers. “I would have this County Highway Commissioner have charge of all the highways within the county, both constructive and maintaining. Eliminate all township taxes and supervision, turn them all to the county and County Highway Commissioner.” While this was, no doubt, an extreme view it nevertheless indicates an important tendency of the present day along different lines of social and economic reform.

In its first annual report to the Governor of Iowa, dated December 30, 1905, the State Highway Commission emphasized the imperative need of more funds to carry out the work required by law and recommended the desirability of having a larger percentage of road taxes expended by county authorities. In the judgment of the Commission there should be a county engineer,

appointed by the board of supervisors, and placed in immediate charge of road work, who in turn should consult the State Commission regarding the standard plans and methods of construction. The report contains a review of the work accomplished by the Commission under the following headings: (1) investigations, (2) experiments, (3) plans and publications, and (4) the road school.

A discussion of the general topography of the State on the basis of glacial districts, an account of road and bridge work carried on in various counties, the expenditure of the different road funds, and a number of closely allied problems are also presented. The results of certain experimental work along the line of traction resistance, gravel road with clay binder, stone roads, and certain problems in concrete, are also included in the report. That is to say, a comprehensive statement of work accomplished, together with the future plans and policies of the Commission, was laid before the Governor and the General Assembly.

Agitation for good roads continued and gradually crystalized into definite policy. On January 11, 1906, Governor Albert B. Cummins addressed a communication "To the Boards of Supervisors and to the associations of every kind organized in aid of the development of the State" asking that the Board of Supervisors in each county appoint three delegates and each association "of whatever kind, organized in aid of development" appoint two delegates to attend the Third Annual Convention of the Iowa Good Roads Association to be held at Des Moines on February 7 and 8, 1906. In his communication the Governor referred especially to the practical value of the King Drag in keeping ordinary dirt roads in a good state of repair.

Largely as a result of the campaign of education carried on by the State Highway Commission and the Iowa Good Roads Association, a number of important bills dealing with the subject of roads were introduced in the General Assembly in 1906. On January 11th a bill to provide for working or smoothing public highways by the use of split log or road drag was presented by Mr. Bailey and referred to the Committee on Highways. Bills were also introduced to increase the tax levy in townships, to amend the law regarding the appointment of a township superintendent of roads, and to amend the law regarding the collection of road taxes, to amend certain sections of the law relating to levees, drains, and water courses, and finally, to encourage the use of wagons with wide tires on the public highways and providing for a rebate of a portion of their road tax to persons using wagons with tires not less than three inches in width when hauling heavy loads on the public roads and highways. It will be recalled that the use of the split road drag had been endorsed by the State Highway Commission and Iowa Good Roads Association.

The proposition to abolish the office of county surveyor and substitute in lieu thereof that of county engineer was also urged by a great many advocates of road reform, and endorsed by the State Highway Commission. Members of the Committees on Roads and Highways of the Senate and House of Representatives held an informal joint meeting to hear representatives of the Iowa Engineering Society with respect to the desirability of legislation along this line. Seth Green of Mills County, Mr. Ratcliffe of Allamakee County, and Messrs. Haley and Budd of Polk County represented the Association in urging the importance of having a competent engineer to assist boards of supervisors in the various counties of the State. The Secretary of the State Highway Commission was present and spoke in favor of the proposition.

The members of the joint committee, however, were in doubt concerning the necessity of such an office, believing that the split log drag and better drainage would solve the road question in the rural districts. For example, Mr. Conn endorsed the wide tire idea and the use of the road drag; but he "doubted the value of the scheme of substituting an engineer for the surveyor, which would largely increase the expense." As a matter of fact the people of Iowa were not as yet ready to assimilate a substantial program of constructive reform along the line of road administration.

The Thirty-first General Assembly, judged from the standpoint of road legislation, was far from being a progressive body. Laws relating to vehicles with wide tires and the dragging of roads were about the only constructive measures of the session. The bills introduced into the House by Bailey, and in the Senate by Turner, amending the so-called Anderson law providing for the consolidation of road districts and the appointment of a township superintendent of roads, were of a reactionary character. The Turner bill gave the township trustees the power to divide a township into two or more road districts, the superintendent of each district to be elected by the people. After a trial of two or more years, it was suggested that the people of a given locality might return to the township basis. The bill also permitted the road tax to be worked out rather than paid in cash. In short, the proposed bills were destructive and reactionary in three important respects: first, the adoption of a decentralized plan of road administration; second, the principle of electing the local road superintendents; and finally, the payment of road taxes in labor. While these measures were defeated, a backward step from the progressive legislation of 1902 was taken in the passage of a bill providing for the appointment of not to exceed four township road superintendents, which had been introduced by the Senate Committee on Highways.

In the meantime the good roads convention to which Governor Cummins had on January 11th invited the boards of supervisors and various associations to send delegates convened at Des Moines and listened to a number of instructive papers dealing with almost every phase of the road question. The primary purpose of the meeting, however, was to give special consideration to certain bills then pending before the General Assembly. Under date of February 5th the following statement appeared in *The Register and Leader*:

“The convention will take up the discussion of several laws which are to be presented to the legislature for further action and also the discussion of laws and resolutions that are now before the legislature. One resolution has to do with the changes in the law to promote the use of the King drag throughout the state and the payment of the same out of the township road fund. The convention will take up further the resolution that was adopted by the recent convention of the road supervisors of the state relative to the reduction of the township road fund from 4 mills, as it now stands, to 3 mills, and the raising of the county road fund from 1 to 2 mills, thus transferring and centralizing the control of the road funds, to the supervisors. The law in regard to compensating wide tires which is already before the legislature, will come in for discussion. The resolution of the recent Iowa Engineers meeting at Des Moines in recommending the extending of the powers of the county surveyor and making him the consulting engineer of the board of supervisors, will be presented for discussion.”

Mr. D. Ward King of Maitland, Missouri, inventor of the road drag, addressed the convention on the use and practical value of his machine. Senator Byron W. Newberry spoke on the merits of the wide tire bill which he had just introduced into the General Assembly, and referred to the fact that New York, California, New Jersey, Ohio, and Vermont had experienced great benefit by the enactment of similar laws. In the course of a few remarks on the general subject of agriculture and the public roads, Henry Wallace, editor of *Wallace's Farmer*, said: “As it has been in the past, we have been obliged to market our crops in about three months in the year — that is, our grain crop. What has been the result? Car famine and inconvenience to us, to the railroads and to everybody. One of the best ways to avoid that car famine and a congestion of grain in the great markets is to amend our ways — get our roads in such shape that we can haul our grain to town any day in the year. That can be done and it can be done over a dirt road.” Mr. Wallace then proceeded to give a practical discussion of the use of the road drag.

Attorney J. C. Davis, representing the Northwestern Railroad, told the convention that “the relations between the railroads and

the public highways are of the most intimate and, so far as railroads are concerned, dependent character. . . . When you arrive at the last analysis, and find that bed rock upon which the prosperity depends, you will find that it rests largely upon the farmer of Iowa, aided by the facility with which he can transport his products from his farm to the railroad station."

From the standpoint of the history of road legislation and administration in Iowa the most important address made before the convention was, perhaps, the one by Hon. F. F. Jones of Villisca, author of the bill creating the State Highway Commission. Mr. Jones spoke with emphasis concerning the loose methods employed in accounting, the bad management, the lack of training on the part of road-builders, and the absence of definite, scientific information regarding the general subject of roads and bridges. He suggested that the State Highway Commission had been created for the express purpose of remedying these defects. Up to date there had been nothing but chaos in the system of working roads. He had found as many different opinions in the General Assembly as there were individual members — which, in his judgment, proved that there ought to be a source of reliable, scientific information. Finally, regarding the location of the State Highway Commission at Ames, Mr. Jones made the following comment:

"Now, I might mention, that Ames was chosen as the seat of this Highway Commission for several reasons. One is that they have the brains and the ability and the Engineering Department. They have the equipment and the organization. . . . There is perhaps no institution of anything like the character that has the confidence of you farmers as has the college at Ames."

At the close of the convention, a number of important resolutions were adopted, endorsing the action of the General Assembly in passing a road drag law, recommending an increase of the county levy, expressing general satisfaction with the work done by the State Highway Commission, and recommending that appropriations for the support of the work be increased. No action was taken, however, regarding the desirability of abolishing the office of county surveyor and of establishing in lieu thereof the office of county engineer.

The good road movement, under the direction of the State Highway Commission and the Iowa Good Roads Association, continued to make progress, although reactionary tendencies were also at work at the same time. The so-called Anderson law, which in its original form had provided for a consolidation of road districts on the township basis and the appointment of one superintendent of roads for each township, had met with constant opposition. As already noted, this law was so amended in 1906 as to authorize the appointment of not to exceed four su-

perintendents. Not content with this change, and determined if possible to return to the old system of administrative decentralization, it appears that in 1907 Representative Teter of Marion County introduced a bill which, from the standpoint of efficient road supervision, embraced three reactionary principles: first, the division of the township into two or more road districts; second, the election of road superintendents; and finally, the payment of road taxes in labor.

According to the bill as originally introduced the division of a township into two or more road districts, after a petition signed by a two-thirds majority of freehold voters had been presented, was made optional with the township trustees. The Committee on Roads and Highways, however, by substituting "shall" for "may" made such a division mandatory. An important amendment, offered by Representative Lister of Grundy County, proposed to strike out all of section five, which provided for the payment of road taxes in labor. The fact that this amendment was defeated by a vote of sixty-six to thirty-three reveals the fact that the sentiment of the House at that time was opposed to the payment of all road taxes in money. The bill finally passed the House by the decisive vote of seventy-three to twenty-seven, but was indefinitely postponed by the Senate.

The gentleman from Marion, however, was not to be defeated in his effort to bring about a more decentralized system of road administration without a further contest. Representative Schoenenberger, it appears, had introduced a bill to increase the road tax levy made by township trustees from four to five mills, which had been so amended as to provide "that one mill or necessary portion thereof be reserved to pay benefits assessed against townships in drainage districts." After being referred to the Committee on Roads and Highways and subjected to various other forms of parliamentary custom, the Schoenenberger bill was finally placed in the hands of the Committee on Judiciary, of which Representative Teter was a member.

On March 6th the Committee on Judiciary brought in a substitute which contained a provision, inserted by Representative Teter, for the optional payment of two mills of the proposed road tax in labor. An earnest effort was made to strike this particular provision from the bill. Representative Dow accused Marion County of being disloyal to the existing laws and suggested that "they want to go back to the old system of the road work." Representative Lee referred to the old method of the farmers "killing time, swapping stories and horses while they were supposed to be working out road taxes," and pointed out the improved condition of the highways since the Anderson law had been passed. The bill including the labor tax provision finally

passed the House by a vote of fifty-eight to thirty-six, only to be indefinitely postponed by the Senate.

Representative Darrah introduced a compromise bill, which he believed would curb the arbitrary power of township trustees and thus make it possible for every taxpayer to have some road work done in his district. The division into small road districts was made mandatory, but the principles, first, to appoint road superintendents, and second, to pay road taxes in money, were both retained. It was provided, however, that "at least seventy-five (75) per cent of the tax collected from each road district shall be expended in the district from which it is collected, the remaining twenty-five (25) per cent to be expended at the discretion of the board." After prolonged consideration this bill was finally withdrawn by its author.

It does not appear that the Thirty-second General Assembly in 1907 was prepared to enact road legislation of far reaching importance. The following laws, for the most part amendatory in character and dealing largely with special subjects rather than general principles, may be mentioned: first, a law authorizing cities of the first class to levy taxes on all the taxable property within such city for the purpose of building or reconstructing bridges, and to issue bonds against such levies; second, a law providing that all roads hereafter established shall be "at least sixty-six feet wide, and in no case less than forty" (actual wording in the Code); third, a law giving boards of supervisors certain powers to prevent the encroachment of streams on public highways and to condemn land necessary for that purpose; fourth, a law conferring upon boards of supervisors the power to grant municipalities the use of the public highway for laying water mains and pipes and fixing the liability for damages; fifth, a law relating to the method of making payments out of the county road fund; sixth, amending the motor vehicle tax law; seventh, a law providing a method of administration for state boundary roads; eighth, regarding the construction of street railways over public roads; and finally, a concurrent resolution providing for the publication and distribution of ten thousand copies of the report of the Iowa State Highway Commission. The filing fee on motor vehicles was increased from one to five dollars and the annual fee for a dealer's permit was placed at ten dollars.

During the biennial period following the 1907 session of the General Assembly of Iowa the State Highway Commission advocated with renewed vigor the cause of good roads. In their report to Governor B. F. Carroll, covering the years 1907 and 1908, the Commission made a careful and thorough review of the work which had been accomplished and suggested a number of definite changes which ought to be made in the road law. It

appears that since its establishment in 1904 the Commission, with the limited funds at its command, had endeavored to get a fairly accurate knowledge of the general topography of the State, data relative to the amount and character of traffic over the roads, and information concerning road materials and the means available for its use in different localities. Moreover, a series of bulletins had also been issued, representing a substantial amount of useful preliminary work both in the laboratory and in the field.

As regards legislation, the Commission suggested the following changes: first, an increase in the expenditure for systematic road dragging, which should be placed more directly under the supervision of the road superintendent; second, the desirability of purchasing road machinery out of the county funds, which should be relatively increased for that purpose, that is, the more general concentration of road funds in order to promote the economical expenditure of the same; third, creating the office of county engineer; fourth, enlarging the powers of the State Highway Commission; fifth, an adequate bridge law drafted so as to secure real competition in the letting of contracts; sixth, a more comprehensive weed law; and finally, a tax on automobiles for the use of the State.

With reference to a greater concentration of road funds, thus making the county a more important unit of government from the standpoint of finance, the following suggestions are pertinent:

"It must be recognized that the township funds are not sufficient to do much road grading, as the handling of road machinery implies not only trained men but trained horses and adequate tools and machinery. As a rule the townships have an investment in machinery that represents the entire tax for one, two or even more years, and it is equally as certain that not much of this machinery is used more than a few days during any year, nor adequately housed and cared for the remainder of the time. . . . It is clearly impossible to drag the roads, built culverts and do much road work with a fund totaling \$1,000 to \$1,500 per year, and the logical step is to make the county road fund sufficiently large to enable the board of supervisors to keep at least one well equipped road building crew at work from April to November. By decreasing the township road fund one mill, and adding this to the one mill county road levy, a fund of about \$12,000 would result in the average county."

The Commission emphasized the fact that by following the policy thus outlined all the main traveled roads of a county might be put in excellent shape in only a few years' time; while it would be quite impossible to accomplish the same result with the road fund divided on the basis of civil townships. In other words, trained supervisors on the one hand, and greater concentration of road funds on the other, were recognized to be an

imperative necessity from the standpoint of the good road movement. A decrease in the township road fund and a corresponding increase in the county road fund, it was alleged "would result in differentiating the work of road maintenance and road building; the one belongs properly to the township and the second to the county."

An enlargement of the powers and duties of the State Highway Commission was suggested along the following lines: to collect and distribute information and reports from and to local road officials; to apportion and distribute any State or national aid appropriation for road improvement; to furnish plans for permanent roads, bridges and culverts, supervise the construction of the same, and aid local authorities in letting contracts for this class of work; to hold meetings for the instruction of road officers and furnish competent road builders and inspectors when required to do so by local road officials; to carry on experiments in order to determine the best building materials and the most economical forms of construction; and finally, to make reports to the Governor regarding work accomplished and a detailed account of all money expended. This large increase in the powers of the Commission, together with the additional office of county engineer, and the enlargement of county funds on the one hand and state road funds on the other, if enacted into law would have produced revolutionary changes in the whole system of road administration.

These reforms, however, were not to be accomplished in the strenuous session of 1909. It is true that the State Highway Commission itself, the Iowa Good Roads Association and a large number of similar organizations, both local and State wide, had been carrying on a vigorous campaign of education to promote the cause of the good road movement, and as a result, public opinion was becoming crystallized and a large group of thinking men favored a more economical and efficient method of building and maintaining highways and bridges. But, while a substantial beginning had been made, the agitation was not sufficiently general to convince the great mass of taxpayers and thus insure the enactment into law of substantial reforms.

In a word, the opposition to scientific road legislation and administration was making every effort to block the good road movement. Moreover, as so frequently happens, the real opposition to reform endeavored to accomplish their purpose by operating through various local officials — especially county boards of supervisors. In order to appeal strongly to the prejudice of the common people, it was alleged that the good road program was striking at the roots of local self-government. The real opposition, as every well informed person knows, came from the bridge companies and other corporations interested in the manu-

facture and sale of various materials and the machinery used in the construction of roads, culverts, and bridges. The representatives of these corporations masqueraded as friends of the common people and pleaded for the preservation of the rights or supposed rights of township and county officials. This method of defeating necessary reforms proved to be very effective in 1909.

Thus while numerous good road associations, commercial clubs, and similar progressive organizations were preaching the doctrine of economy and efficiency in the expenditure of public funds, a group of producing corporations, desirous of selling the maximum amount of their goods at monopoly prices, were inducing boards of supervisors and other local officials to make specious pleas for the preservation of local institutions—when in reality they were perpetuating a system of wastefulness and inefficiency at the expense of the Iowa taxpayers.

About fifty bills relating directly or indirectly to the general subject of roads and bridges were introduced into the General Assembly in 1909. Some of these measures were of a progressive, others of a decidedly reactionary character. The recommendations of the Iowa State Highway Commission formed the basis of proposed legislation to create a county highway engineer, a more efficient road drag law, the formation of road improvement districts, the destruction of noxious weeds, the tax on motor vehicles, and finally, an enlargement of the powers of the Commission itself. The reactionary bill, upon which the opponents of reform centered their efforts, was introduced by Representative Zeller of Madison County. It provided for a more decentralized system of road administration, the election of road superintendents, and the payment of road taxes in labor.

Space will not permit of a detailed analysis of the many important road bills considered by the Thirty-third General Assembly. To appreciate the character of the arguments urged for and against the good road movement it is only necessary to outline briefly a few of the bills that became the storm center of popular discussion. First of all, mention should be made of the bill introduced by Representative Bonwell to create a State Highway Commission, defining the powers and duties of the same, and providing a system of State aid or reward by coöperating with townships and counties in the improvement of public roads. It was provided that the Iowa State College of Agriculture and Mechanic Arts at Ames should act as a State Highway Commission and as such "be charged with the giving instruction in the art of building, improving and repairing public wagon roads and bridges, collecting reports from township trustees, boards of supervisors, superintendents and street commissioners in cities and towns, and with the distribution of any State reward for improving the public wagon roads, that may be provided by the

Legislature and any funds that may be given to the State for such purposes by the United States government.”

Road superintendents and street commissioners were, by provision of the bill, obliged to make sworn reports to the Commission, which in turn through its highway engineer was required to furnish plans and specifications, give expert advice under certain conditions, study the quality and cost of various kinds of road material, keep a record of its proceedings, and in fact exercise general supervision over the highways of the State. Perhaps the most significant feature of the bill was the provision for State reward to be distributed by the Highway Commission on application of the township trustees “notifying the department that the township has made arrangements to improve a mile or more of public wagon road by building a clay gravel, a gravel, a stone gravel, a gravel stone, a macadam, or a King drag clay road.” The distribution of the State reward fund was in sums from fifty dollars to one thousand dollars per mile, depending upon the character of the proposed highway. The amount given any particular township was limited, and an appropriation of \$40,000 was made for the year ending June 30, 1910, and \$60,000 for the year ending June 30, 1911. In other words, the Bonwell bill provided for a State commission clothed with real power and authority and outlined a system of State aid or reward.

A bill along practically the same lines, but somewhat more radical in character, was introduced by Representative Fulliam. The salary of the State Highway Commissioner was fixed at \$4,000 per annum. On the whole, this measure was not prepared with the same care and thorough study of detail as that presented by Representative Bonwell. Finally, mention should be made of a bill introduced by the Committee on Roads and Highways providing for an appropriation of \$30,000 for the State Highway Commission.

Again, bills were introduced which provided in one way or another for creating the office of county road engineer. In this connection the measures presented by Representatives Corrie and Hackler formed the basis of discussion. That introduced by Representative Hackler authorized the county board of supervisors to appoint a county highway engineer and fix his salary — at not less than nine hundred dollars nor more than twenty-four hundred dollars per annum. This county engineer was to be a resident of Iowa and “skilled in laying of drains, bridges, culverts, and road building and general road work, and he shall have a practical knowledge of civil engineering.”

The official to be thus appointed was clothed with large powers and authority, having general supervision over the highways of his county. He was to be custodian of all tools and machinery belonging both to the township and the county, have direct

supervision over road superintendents and the expenditure of all county and township funds, be responsible for the construction and maintenance of culverts, bridges, and roads, approve all claims for road work done under contract before warrants were issued, inspect the condition of the roads, culverts, and bridges of each township as often as practicable, file a statement of the condition of the roads and amount of money available for each township with the board of supervisors, and finally he was to call an annual meeting at the county seat of all road superintendents and township trustees of the county. Briefly stated, the bill made the county a vastly more important unit of local government from the standpoint of road administration. The county highway engineer was to be a necessary connecting link between the numerous local officials representing the civil townships on the one hand and similar local districts and the State Highway Commission on the other.

The bill presented by Representative Corrie would have accomplished the following changes: first, an increase of the county road fund by the levy of a tax not to exceed three mills on the dollar; second, the selection of certain roads to be known as county roads, at a joint meeting of the board of supervisors and one or more of the township trustees of each township; and finally, the appointment of a county highway engineer. It was further provided that eighty per cent of all taxes should be expended in the township where collected.

Mention should also be made in this connection of another measure, introduced by Representative Darrah, providing for the issuance of bonds for constructing permanent highways, bridges, culverts, levees, drains, and ditches and the appointment of a county road engineer. Now when we add to these measures the various bills providing for the destruction of noxious weeds, the dragging of the public roads, the efficient collection of road taxes, and finally, the taxation of motor vehicles, we have a substantial body of constructive road legislation.

The Greater Des Moines Committee, the State Highway Commission, and various other organizations sent representatives to plead for the passage of the different good road bills. The bridge companies, aided by the county boards of supervisors and other county officials, formed the opposition. The greatest obstacle to overcome, however, was the apathy and spirit of conservatism which prevailed among the people — a condition which resulted from a lack of definite scientific knowledge relative to the road and bridge question.

Under date of March 21, 1909. Representative Bonwell, Chairman of the Committee on Roads and Highways, in a personal letter to Professor MacDonald, State Highway Engineer, said that "the Zeller bill and the committee drag bill have passed

both houses and I believe that is all the legislation on roads we will get this session. I don't think there is any hope for my bill." In fact, nearly a month before this letter was written, the following comment appeared in *The Register and Leader*:

"Good road advocates are up against a spirit of apathy and conservatism among members of the Iowa legislature that now threatens to postpone the passage of laws for accomplishing anything like state wide improvement of roads for at least another two years. . . .

"On Thursday evening several bridge men asked Chairman Bonwell of the house roads committee to meet with them at the Savery hotel. At this meeting they argued against all bills now in the hands of the committee which would affect bridge work.

"Mr. Bonwell asked them what they would recommend in place of these bills, and according to him the bridge men declared the laws should be left as they are."

The Thirty-third General Assembly, however, was not content with defeating practically all constructive legislation, but was determined to go even farther and if possible destroy what little efficiency remained in the general system of road administration. As already noted, one bill had for its purpose the repeal of the Anderson law, or rather the amendment of that law in such a way as to entirely destroy its efficiency. It provided for three principles which rightfully belong in the field of strictly pioneer legislation: first, a multiplicity of small road districts, as provided for by Iowa Statutes sixty years ago; second, the election of road superintendents; and finally, the payment of road taxes in labor. Among other provisions the bill stipulated that "when the township is so divided the electors of each road district, at the regular annual election of the even-numbered years shall elect a road superintendent for the term of two years," and further that "in townships which are divided into two or more road districts the township trustees shall permit resident property owners to work out all or part of their property road tax for the year in which said tax is assessed, and shall at their regular annual meeting in April determine the amount of tax to be paid in labor and the amount to be paid in cash."

Before this measure passed, however, some of its more objectionable provisions were eliminated. The Committee on Roads and Highways introduced an amendment providing that "not to exceed seventy-five per cent" of the road tax should be paid in labor, which indicated that there still remained some appreciation of the meaning of the good road movement. In the Senate, on motion of Senator Larrabee, the amount of road taxes which could be paid in labor was reduced to fifty per cent. The bill, as finally passed, retained the principles of (1) election rather than appointment of road superintendents, (2) small road dis-

tricts, and (3) as a compromise the payment of one-half the property road tax in labor. In other words, the law represented a backward step from the road legislation that had been enacted in 1902.

Out of a total of nearly fifty bills relating to roads and bridges which had been introduced in 1909 approximately fifteen were enacted into law; but aside from the Zeller bill, a bill to promote the building of permanent roads which had been introduced by Senator Smith, and possibly the bill relating to the destruction of noxious weeds, the remaining measures were of a more or less special or amendatory character and did not affect in any important way the general machinery of road administration.

Among the list of enactments may be mentioned an act providing that roads and highways within and adjacent to State lands should constitute a separate road district and be placed under the supervision of the governing board of the particular institution. Finally, the road legislation in 1909 embraced the following subjects: authorizing boards of supervisors to grant the use of public highways for erecting and maintaining poles and wires for the transmission of electricity and fixing the liability for damages; relating to the county road and county drainage funds; the erection of guide boards; the trimming of osage orange, willow, and other hedge fences; a more stringent road drag law; and finally, the regulation of traction engines and automobiles.

With reference to the dragging of roads it was made the duty of township trustees to "have all the main traveled roads, including mail routes, in their townships dragged at such time as in their judgment is most beneficial, and they shall contract at their April meeting to have a given piece of road dragged at a rate not to exceed fifty cents per mile for each mile traveled in dragging." The law further specified that where it was deemed necessary not less than forty per cent of the road tax collected under the levy made by the township trustees on land abutting the road or adjacent thereto should be worked out on such road.

The law passed to promote the building of permanent roads in the State and providing for the establishment of road improvement districts is worthy of special study. Viewed from the standpoint of the general system of road administration, this was the only real constructive act of the session. The board of supervisors was clothed with "jurisdiction, power and authority at any regular, special or adjourned session, to establish permanent road improvement district or districts and to cause to be constructed as hereinafter provided, by grading, guttering and curbing and paving or macadamizing permanent highways, and to provide for the making and reconstruction of any such highway improvement and to assess not less than fifty per cent of the cost thereof on abutting or adjacent property as provided in this

act." In order to provide funds for carrying out the purposes of the act, the board of supervisors was authorized to levy a tax of not more than two mills on the dollar of the assessed value of taxable property in the county, including all taxable property in cities and incorporated towns. Counties having the mullet tax, might use all or any part of the same for permanent road improvements.

The friends of the good road movement, however, were not to be defeated in their ultimate purpose to secure substantial reforms. Good road associations in almost every section of the State, commercial clubs, chambers of commerce, and similar organizations of a progressive character renewed their efforts to educate the people as to the importance of a better system of highways. The State Highway Commission continued to be the real force guiding the movement in a conservative basis and along strictly scientific channels.

The conflicting views in reference to road administration were perhaps nowhere more sharply defined than in the Good Roads Convention which met in Des Moines on March 8 and 9, 1910, under the call of Governor Carroll. Senator Lafayette Young was chosen to act as chairman of the convention and the opening address was delivered by the Governor. Everything proceeded harmoniously until the vital point was reached, namely, the proposition to create the office of county road engineer. Then the storm broke which resulted in the defeat of this particular resolution. The opposition to a county road engineer was led by the representatives of bridge companies who were aided and assisted by county supervisors and township trustees. It was made to appear that the good road leaders were attempting to destroy local self-government. Indeed a Des Moines newspaper commented that "the poor road trustees and supervisors of Iowa were placed on the grill yesterday at the state good roads convention and forced to call for mercy." As a matter of fact the trustees and supervisors were not without some real and powerful support: the bridge companies had voluntarily provided many of them with hotel accommodations as a preliminary arrangement for the contest which was soon to be made for the rights and liberties of the people.

Inspired and directed by the able and resourceful representatives of the bridge companies and other producing corporations interested in the sale of road materials and machinery at maximum prices, a number of trustees and supervisors — speaking nominally for their constituents but in reality to promote selfish ends — replied to the arguments of the "reformers." One delegate referred to the county road engineer as "a scheme to create more offices, as a useless expense which would be productive of no better roads and would be a burden upon the people." An

other delegate from Wright County believed that "the plan of county engineer meant merely giving places to a lot of boys from college without accomplishing anything." A gentleman from Monroe County said that "they did not have to go to the colleges to get men capable of using the level." An inspired voice from Lucas County alleged that "a county engineer would cost \$1,900 to \$2,400 a year and not a spade full of dirt thrown."

The real nature and purpose of these arguments is apparent to the critical reader. As a matter of fact thinking men are coming more and more to realize that it requires as much engineering skill to prepare plans and specifications for a permanent road, or the building of a concrete bridge, as it does to draw plans for railroad construction. Indeed, this obvious fact was recognized by no less an authority than Professor J. W. Jenks, a quarter of a century ago. Any man or group of men who contend that it requires no special training and expert knowledge to supervise highway and bridge work are thinking the thoughts of their pioneer ancestors and speaking strictly in terms of pioneer life. It may be safely assumed that the defenders of the inefficient and antiquated system of road administration which now prevails in Iowa are either prompted by selfish ulterior motives, as has been the case with bridge companies and certain other producing corporations, or they speak with a total lack of scientific knowledge and appreciation of the importance and complexity of the problem, which has frequently been true of township trustees and county supervisors.

At the Good Roads Convention which met in Des Moines on December 28, 1910, immediately preceding the convening of the Thirty-fourth General Assembly, more substantial results were obtained. The following resolution, drafted by a committee composed of Senator N. Balkema, J. W. Foster, W. F. Stipe, C. G. Thomas, and F. Morris, was adopted:

“Resolved

“1. That in the interest of simplicity we favor a re-writing of the road laws of the state into a single act.

“2. That we favor the compulsory dragging of earth roads and the creation of a non divertible drag fund.

“3. That we favor a simple system of road management under a centralized authority which shall work through skilled and competent appointed officers.

“4. That we favor some form of state aid to encourage good road building.

“5. It is the sense of this conference that an increased per cent of our road funds be entrusted to the management of the Board of Supervisors.”

It should be stated, however, that the name of the chairman of the Polk County Board of Supervisors, who has since been compelled to resign his position, was not signed to the resolution. In coöperation with a supervisor from another county, who also has since resigned under fire, and other gentlemen, he presented the following minority report:

“Be it resolved by the State Good Roads Conference in session assembled, that it is the sense of said conference that the County Road funds of each County of the State of Iowa be placed in the hands of the Boards of Supervisors of the various counties of the State for expenditure, in the employment of an Engineer at such time as they may deem best, and at a price they may fix, and they, the Board of Supervisors, to have supervision and direction of all work.”

After a somewhat animated battle of words this resolution of the minority report failed by only two votes; but later in the program it was again brought up and defeated by a large majority. Indeed, the conference, after listening to a number of instructive addresses, went on record in favor of State aid, a complete revision of the present road law, the centralization of authority in the hands of trained engineers, and the compulsory dragging of roads. Judge H. E. Deemer made an able plea in behalf of a graduated tax on motor vehicles.

When the General Assembly convened in January, 1911, the issues in reference to road administration were more clearly defined than ever before. Arguments in favor of a more economical and efficient plan of caring for roads had been presented in every section of the State and given wide circulation through the columns of weekly and daily papers.

The Iowa State Highway Commission in its report to the State Board of Education for the biennial period July 1, 1908, to July 1, 1910, gave a brief history of the work of the Commission since it had been organized in 1904 and outlined somewhat definitely the essential features of a scientific system of road and bridge administration. Among other statements the following is suggestive:

“The amount spent in the state annually from which no results are obtained would, with the Commission adequately supported, be reduced very materially. With adequate state supervision, the \$5,000,000.00 spent annually on the roads and bridges would show results more consistent with the big expenditure. The record of incompetent and frequently flagrantly dishonest handling of contracts, special bridge contracts, pulls and agreements in restraint of competition and the erection of flimsy and inefficient structures and disorganized methods of road work, would be in only a few years almost completely revolutionized. For such

work the integrity and solidity of an institution such as the college is needed."

As an aid to the General Assembly in drafting road legislation along the most approved scientific lines, the Commission prepared an outline of a proposed law providing for surfaced roads, and also submitted a brief to the committees on highways in favor of the good road bills. With reference to a law providing for surfaced roads, it was shown that all work undertaken along this line should be entirely on the initiative and at the option of the property owners themselves. The part of the cost of such improvement paid by the State should "serve as a nucleus about which to gather the local resources, and would offer the advantage of supervision by trained men." As suggested, the plan contemplated the organization of improvement districts upon the petition of the property owners, following the successful experience of a number of good road States.

In an outline of a proposed law drafted by the Commission it was proposed that the Board of Supervisors should establish road improvement districts on the recommendation of the State Highway Commission, the cost to be shared in equal parts by the State, the County, and the improvement district. The part paid by the State was to come from a license tax on automobiles, and that paid by the county from the mullet tax, or from the regular county road fund, which should be increased for that purpose. The remaining third of the cost, to be paid by the improvement district, was left with the local commission, "appointed to assess the benefits against the abutting and the adjacent acres in proportion to the benefits derived from the improvements." Thus the State Highway Commission presented a thorough scientific plan, based upon the successful experience of other States.

In a more comprehensive brief, presented at a joint meeting of the highway committees of the General Assembly, the State Highway Commission outlined the following essential points: first, that constructive principles should prevail in all matters presented before the committees, in other words, that an appeal should always be made to reason and not to popular prejudice; second, that all main traveled rural route roads should be dragged frequently; third, roads should be properly drained and the hills reduced to the lowest practicable grades; and fourth, culverts and bridges should be built safely, permanently and economically. It was also clearly stated that the advocates of the good road movement had in mind the strengthening of the county as a unit of local government, and not the assumption of local rights by the State. Finally, the joint committee was informed that the road drag law, though mandatory on paper, had never been carefully enforced, due partially to the lack of a specific and

definite system and partially to the absence of intelligent supervision and control.

With reference to the grading and draining of roads, the Commission emphasized the fact that the county is the only practicable unit to do this class of work efficiently. From the very nature of the case, township funds were inadequate for the obtaining of skilled men — the inevitable result being wastefulness on the one hand and inefficiency on the other. The work in Dallas County had proved the force of these arguments. Uniform road sections, proper grades, and the best system of drainage and of contract plans, represented a class of work which could be done properly only by men of experience who possessed a sufficient knowledge of engineering.

The reasoning which applied to the proper grading of roads, drainage, and similar problems was even more applicable in the case of culverts and bridges. On the one hand, the State Highway Commission maintained that the heavy traffic under present economic conditions required the construction of permanent and more substantial bridges, whereas in the past little or no attention had been given to the expenditure of vast sums of money for this purpose. Then it was shown that the loose and unbusinesslike methods of supervision and control on the part of local officials has resulted in excessive prices and light, unsafe structures. The opposition to constructive reform, according to the prepared statement of the Commission, "centers around the bridge and culvert question. Some prejudiced opposition comes from the trustees and farmers, but the careful calculated organized opposition has only one source."

Indeed, the following definite recommendations were made by the Commission: first, a drag fund, not divertible; second, all money spent for road grading and tiling should be handled by the county; third, bridges and culverts should be let by public contract except in smaller sizes; and finally, each county should have in its employ a man trained and experienced to superintend and inspect the expenditure of road funds, in other words, a county road engineer.

The Iowa Engineering Society also appointed a committee to submit a synopsis of the different road bills then (1911) pending before the General Assembly. The Greater Des Moines Committee, the Commercial Club of Des Moines, and numerous other associations took an active interest in supporting the cause of good road legislation.

The opposition, however, was even more active than in 1909. Certain bridge companies and a group of county supervisors and township trustees, who were opposed to any important changes, maintained a regular lobby at Des Moines in order to make sure of defeating any good road bills that might be introduced. The

same arguments were used and the same appeal was made to local prejudice as in 1909. It was the old story of the representatives of bridge companies and other corporations pleading for the rights of local officials and for the preservation of local self-government.

The chairman of the Legislative Committee of the State Supervisor's Association of Iowa, who has since resigned under fire, opened a regular office at the court house in Des Moines, which was closely affiliated with the Polk County Board of Supervisors. From this office were sent out to county supervisors and certain other local officials of the State letters containing a list of thirteen questions, for the purpose of arousing opposition to the work of the State Highway Commission and the good road bills then pending before the General Assembly. Now it is a well known fact that questions can be so drafted as to obtain the answers desired — especially when one is dealing with a subject about which there is much misunderstanding and no little prejudice.

The real character of the communication referred to becomes apparent upon an examination of the questions which relate to the advertising for bids on a competitive basis and the proposed office of county engineer. Thus the fifth question read as follows: "Are you in favor of a County Engineer, who shall make all surveys and prepare plats and profiles of all new road work, and also make detailed plans and draw specifications for each bridge and each culvert to be built, and that the Board of Supervisors must let the contract in accordance therewith?" It is somewhat surprising that out of a total of two hundred and sixty-three answers received two replies were in the affirmative.

Question six is even more interesting: "Are you in favor of advertising for bids for all bridges, culverts and road work to be built, for two weeks, and for the letting of the contract ten days later, making a total of twenty-four days, exclusive of the time consumed by the engineer in preparing the plans and specifications, and in case bids are not satisfactory, the work to be re-advertised for the same length of time? Do you think this is a practical way of letting contracts?" For some unknown reason, out of a total of two hundred and sixty-seven replies, nine were in the affirmative.

Summing up the results of the campaign of education among local officials conducted under the general direction of the Chairman of the Legislative Committee of the State Supervisors' Association of Iowa, it should be said that replies were received from supervisors in ninety-three counties of the State, while seventy-one letters came from various other sources. These letters, together with a number of resolutions, drafted by Good Roads Schools of Instruction for Township Trustees condemned "in bitter terms all the proposed legislation relative to roads and

highways; therefore it must be very apparent to you," runs the document, "after considering the above, that the wish of the people of the State of Iowa expressed through their township and county officers is that the present laws relative to roads and bridges are preferable to House File, No. 131, known as the Whitney Bill or any similar bill. Further, that they are unanimously opposed to the creation of a new county office to be known as the county engineer, at a yearly salary, and they are also of the opinion that the Highway Commission of the State of Iowa is and has been a failure, and that the same should be discontinued."

It is apparent from a study of contemporary sources that the methods adopted to defeat the good roads bills represented an appeal to prejudice rather than to reason. Nothing was said about the wastefulness and inefficiency of the old system. No explanation was made as to why such a vast sum of public revenue was annually expended without securing more substantial results. Moreover, it was assumed that because a very small group of local officials were opposed to constructive reforms, the people themselves were likewise in opposition. In this connection, one should always bear in mind first, that all of the township and county officials represent only a small fractional part of one per cent of the taxpayers in the State, and second, that the average taxpayer and a large majority of the trustees and supervisors themselves when thoroughly familiar with the facts have always been in favor of economy, and efficiency in the administration of public funds.

As a matter of fact appeals to prejudice proved to be more effective than appeals to reason in 1911. Public opinion had not sufficiently crystallized to bring adequate pressure on the General Assembly to counteract the opposition stimulated by bridge companies and local officials. The taxpayers were not informed, and therefore were either inactive or in some cases gave their moral support to the opposition. Out of nearly fifty bills which were presented to the General Assembly, dealing with the subject of roads and bridges only three or four of any special importance were enacted into law. The others were for the most part buried in the highway committees, and did not reach the floor of the General Assembly.

Of the House bills the following received the most general discussion throughout the State: first, an act to completely revise the whole system of road laws introduced by Senator Whitney; second, an act creating a State Highway Department and establishing a State Highway Commission and the office of State Highway Engineer, introduced by Representative Fourt; and finally, an act relating to the registration of motor vehicles, regulating their use and providing for the expenditure of license fees and funds introduced by Representative Kulp. Other important

bills relating to road dragging, drainage of roads, and the destruction of noxious weeds might also be mentioned. In the Senate the so-called Whitney bill was introduced by Senator Balkema, and a measure to create a State Highway Department was presented by Senator Van Law.

Space will not permit of a detailed analysis of the various bills which were proposed. Those mentioned above were drafted largely on the basis of the recommendations of the State Highway Commission and had the general support of those interested in the good road movement. Several of the leading bills may with profit be briefly summarized. The bill introduced in the House by Representative Whitney and in the Senate by Senator Balkema provided for: first, the consolidation of road districts on the basis of the civil township, thus following the original Anderson law of 1902; second, the office of county road engineer; third, the letting of contracts by competition to the lowest responsible bidder; fourth, a more comprehensive road drag provision; and finally, a complete revision of the law regarding bridges, drainage, and culverts. The fundamental principles of the bill was greater administrative efficiency — to be brought about, first, by transferring duties and functions from smaller sub-districts to the civil township, which was to be made the smallest unit of local government from the standpoint of road administration, and second, the consolidation of greater powers in the hands of the board of county supervisors operating through an efficient county engineer.

The Fourt bill in the House and the Van Law bill in the Senate supplemented the Whitney and Balkema bills by providing adequate State machinery of road administration. The student of political science is familiar with the fact that in dealing with any comprehensive problem of administration, like public education, public roads, or public revenue, there must be some definite system of State supervision and control, otherwise the local machinery of administration in the counties and civil townships can not operate harmoniously. In other words, the several areas and phases of administration from the township or sub-district to State organization should be closely related and carefully interwoven, so as to form one definite, workable, harmonious system.

Now it is evident that the county, from the standpoint of practical administration, is a necessary connecting link between the civil township on the one hand and the State on the other — a fact which has too often been overlooked by the lawmakers of Iowa. The Whitney and Balkema bills outlined a definite, workable system for the counties and civil townships, in which the responsible head was a county road engineer to be appointed by the county board of supervisors and subject to their general

supervision and control. The Van Law and Fourt bills provided for a State Highway Commission clothed with large powers and authority, and outlined a system of State aid or reward. In the former measure funds were to be raised by a license tax on automobiles, but the Fourt bill levied an additional quarter of a mill on all the taxable property of the State.

When it became evident, toward the close of the session, that there was no hope of passing these bills, the good road supporters were determined, if possible, to save something from the wreck and by so doing provide an entering wedge for constructive legislation in the future. Accordingly, the highway committees of both the Senate and the House introduced a bill which was clearly a compromise measure. By its provisions the board of supervisors was vested with authority "to employ a competent person who shall perform all of the duties now belonging to the office of county surveyor, and who may now be employed by them for the purpose of making plans and specifications for the grading, repairing and building of roads, bridges and culverts and to perform such other duties as the board of supervisors may determine." For the grading and building of roads a county road building fund was to be created by the levy of a tax of not more than two mills on the dollar of assessed valuation. Finally, the bill required the trustees to select a township superintendent of dragging, and make contracts for the dragging of the highways.

It will be observed that the provision relating to the appointment of a county road engineer had the appearance of being a harmless compromise for two reasons: first, the system was entirely optional with the county board of supervisors; and second, the individual selected was to be a "competent person," — which of course means something or nothing according to the wishes of those in authority. Nevertheless it was a small recognition, first, of the necessity of more intelligent supervision and control of county road and bridge work, and second, the desirability of having a connecting link between the local officials on the one hand and the State Highway Commission on the other.

Under date of March 20th the following comment appeared in *The Register and Leader*: "A good roads bill making important changes in the present road laws has been prepared by the house committee on roads and highways. . . . The measure gives new powers to the county boards of supervisors and regulates the levying of taxes and the powers and duties of the township trustees." As proof of the compromise character of the act, the following statement is significant: "The measure is the first of several which good roads enthusiasts hoped to have passed by this legislature." When finally passed the bill was characterized as "one of the most important road measures before the General

Assembly," including as it did "many of the features of other bills concerning the regulation of road work."

In concluding the discussion of road legislation of 1911 at least a brief reference should be made to the new road drag law, and the so-called Kulp bill regulating motor vehicles, levying license fees, and providing for the distribution of the same. As originally introduced the Kulp bill provided for a registration fee of eight dollars on motor vehicles having a rating of twenty horse power and less, and an additional forty cents per horse power above that amount. After being used four years the fee was fixed at half the regular amount; and the rate on motor vehicles used solely for commercial purposes was placed at five dollars. Finally, all funds obtained under provision of the act were to be distributed equally among the counties and designated as the "County Motor Vehicle Road Fund," which was to be used for the following purposes only; "the dragging, graveling or macadamizing of public highways outside of the limits of cities and towns, and for the building of permanent culverts on such highways."

As finally enacted into law, the Kulp bill provided for the payment of an annual fee of fifteen dollars for the registration or re-registration of any electric or steam motor vehicle, also an annual fee of three dollars for the registration or re-registration of a motor bicycle or motorcycle. In the statute, as approved, no distinction was made between ordinary motor vehicles and those used for commercial purposes. The method of distributing the funds, however, as provided in the law is very different from the plan outlined in the original bill. Fifteen per cent of the tax is now retained in the State treasury and the remaining eighty-five per cent is "apportioned among the several counties of the state in the same ratio as the number of townships in the several counties bear to the total number of townships in the state."

As already suggested, this bill created much enthusiasm among the friends of the good road movement throughout the State — especially owners of and dealers in automobiles. Indeed, it received more publicity than any other road measure considered by the Thirty-fourth General Assembly. In the consideration of the chief point of the controversy was the distribution of the tax obtained from this source. Some wanted the whole amount to be retained in the State treasury and used as a State aid fund; others believed that all the tax should be distributed among the counties as provided in the original Kulp bill; and still others desired a different plan of distribution.

Regarding the desirability of placing all of the tax into the State treasury, an editorial in *The Register and Leader*, entitled *Automobile Taxation*, contains the following instructive statement:

“Apart from this legal reason for eliminating the local taxes on automobiles, there is this further reason:

“All special sources of revenue, like automobile taxes, telephone and telegraph taxes, railroad taxes, hunters’ license taxes and others that might be named, ought to be granted exclusively to the state. . . .

“If the state were given exclusively the revenue from these sources, it would in time make unnecessary a state tax levy on other property.”

When the bill providing for a tax on automobiles was pending before the General Assembly opinions were freely expressed by almost every class of citizens. A gentleman representing the Commercial Club of Des Moines declared that “Des Moines is willing to pay her share of the expense of improving Iowa roads if the money is expended judiciously.” “I believe that 90 per cent of the auto owners will sanction the Kulp bill,” said a prominent dealer in motor vehicles. With reference to the method of distributing the funds, the following comment was made:

“A generous slice of the automobile tax pie provided for in Representative Kulp’s automobile and good roads bill was reserved for the state of Iowa yesterday afternoon by the members of the house committee on ways and means. . . .

“Fifteen per cent of the fund is to go into the general fund of the state as the bill stands with the amendment of the ways and means committee.”

Finally, “An Act to repeal chapter one hundred and one (101) of the laws of the thirty-third general assembly and to enact a substitute therefor relating to the dragging of public highways and providing penalty for failure to perform such duties,” should not be overlooked. This measure had been introduced and ably supported by Representative Cunningham of Buena Vista County. Briefly stated, the law as finally passed made it the duty of township trustees to divide the public roads of the township into permanent road dragging districts, “designate what districts shall be dragged which must include all mail routes and all the main traveled roads within the township,” and appoint a superintendent of dragging to serve for one year unless sooner removed by the board. The trustees were also required to furnish suitable road drags for the township, paying for the same out of the township road fund, it being further stipulated that the superintendent of dragging shall “cause all roads to be dragged that the township trustees may from time to time direct at such times as in his judgment is most beneficial.”

While the law as thus enacted was doubtless an improvement upon previous legislation dealing with the subject, it was still defective from two important standpoints: first, the tax for that purpose being limited to fifty cents per mile was not ade-

quate to produce satisfactory results; and second, the superintendent of dragging should be clothed with larger powers and authority and held directly responsible for the work.

Again defeated in their efforts to place the administration of roads and bridges on an economical and efficient basis, the friends of the good road movement were more determined than ever before to reveal to the taxpayers of Iowa the real condition of road affairs. While a number of organizations were active along this line, the Des Moines Commercial Club and the leading daily papers of that city proceeded to make an investigation of the methods of building bridges and supervising road work which had been employed in Polk County by the board of supervisors.

Those engaged to carry on this work were not long in obtaining sufficient data to prove that large sums of money had been annually expended without keeping a correct and adequate account thereof. In other words, there was a total absence of any method or system of bookkeeping in reference to the expenditure of the public funds. More than this, it was also discovered that bridge contracts were frequently let on the basis of a private agreement without competition. In Polk County, for example, nearly all of the bridges had been constructed by one particular bridge company. It also appears that the contract price for bridges included royalties paid for certain patents used in the construction of arched bridges. Even a superficial investigation demonstrated the fact that the State was divided on some "equitable basis among the various bridge companies." "My county" and "my territory" were terms commonly used among bridge men.

A more careful study of conditions showed the existence of a comprehensive plan on the part of powerful bridge companies, not only to destroy competition in the letting of contracts but to shape and control road and bridge legislation as well. For example, it has been frequently alleged in this connection that "their representatives are conspicuous at the annual conventions and it is said that they pay a large share of the expense incident to such meetings. At the convention in Sioux City a little more than a year ago, it was said that one company alone paid for one hundred and twenty-five rooms at a single hotel. The clerk at one hotel put the card of an outsider who attended the convention in a bridge company's box and when the guest came to pay the bill he was informed that the matter had been attended to." Charges of this character, being made over and over again, suggest a new light on the character of the plea which had been made so frequently by these same representatives for the preservation of "local self-government" and the rights of the individual taxpayer.

Regarding the use of the so-called patented designs for bridges, it appears that the agents for a certain patentee induced super-

visors in "their counties" to insert in "specifications" governing so-called "competitive bidding" the following statement: "The contracts shall protect the county against suit for infringement of patents on account of any patent whether granted or applied for on any device used on the structure and shall show evidence of settlement or agreement with the patentee before final settlement." Thus an effort was made to intimidate supervisors who desired to employ other companies to do their work, and this was supplemented by sending out warnings and copies of federal court decrees purporting to show that said patents had been declared legal, and emphasizing the possibilities of infringement, although such decrees had been obtained merely by consent of intimidated individuals, and not by trial of the merits of the patents.

Immediately following the preliminary investigation above referred to, the Des Moines Commercial Club commenced proceedings against one of the Polk County supervisors under the Cosson law. Now the Cosson law provides four methods of removal from office: first, the county attorney may start action; second, the attorney general may proceed against officials; third, the governor may instruct the attorney general to commence proceedings; and fourth, five or more qualified electors may commence action by petition of the attorney general. The Commercial Club concluded to adopt the fourth method of bringing suit in this case.

Space will not permit of a detailed history of this important case, which would, indeed, require a lengthy chapter in itself. On the one hand, the State Highway Commission was employed to make a careful detailed study of all the bridges in Polk County, prepare a map showing the location of the same, and file a report. On the other hand, an equally thorough investigation was made of the records in the county court house. The following statements from the *Des Moines Daily Capital* will give the reader an idea of the charges made at the time suit was filed:

"It is claimed that he practically turned the entire bridge interests of his district over to one bridge company, permitting the erection of more than \$100,000.00 worth of concrete structures during his term, without ever asking a competitive bid, without ever requiring the submission of plans, designs, specifications or estimates. It is claimed that he never saw, let alone checked, a single itemized bill for a completed bridge; that no bridges were properly inspected during the building; that he caused to be torn down good wooden bridges to permit the erection of concrete bridges; that he neglected scores of wooden bridges in his district, using up his bridge funds on comparatively few concrete structures, the total number of concrete bridges

being only about one-fifth of the total number of bridges in his district; that he caused concrete bridges to be erected on spur roads with no outlet, presumably to favor some political friends; that he neglected important bridges in dangerous conditions on main traveled roads; that he has kept no accurate records of his bridges, their cost of construction, blue prints or any data or records by which the people can determine what their money has been paid out for or upon which they can determine the kind of basis settlement that was made with the bridge company, which has drawn from Polk County \$325,000 during his term, the greater part of which he was chairman of the bridge committee."

Following the commencement of legal action by the attorney general, the matter was given the widest publicity through the press of the State. Facts were presented to show that a system of wastefulness and inefficiency had been in existence in Polk County for many years, which it was alleged was typical of scores of counties throughout the State. According to the *Des Moines Capital*, it was the belief of the attorney general, and the other lawyers handling the case, that "the clearing up of the methods in vogue in the handling of county business is one of the most important things confronting Iowa today. It is for this reason that he has, through his office, taken such care in the preparation of the evidence against the Polk County supervisors."

In the meantime, Professor Thos. H. MacDonald was making a careful survey of Polk County and preparing a map and report, as requested by the Des Moines Commercial Club. On January 23d, February 6th, and February 13th, preliminary reports were submitted, but the final report was not filed until March 2d. The summary of conclusions given in this report, which will be especially instructive to Iowa taxpayers, are as follows:

"1. The construction of a number of the bridges had been needlessly wasteful and extravagant in the following particulars:

- "a. Longer bridges have been built than are now or will be in the future necessary to meet the traffic requirements.
- "b. Larger bridges, i. e. size of openings, have been built than are necessary to carry the road drainage. Some of these openings are built sufficiently large for use as cattle-ways.

"2. Although for the past several years the bridge funds have been largely exceeded, only eight and four tenths per cent (8.4%) of the total span of bridges in this district are of concrete.

"3. Ninety-one and six tenths per cent (91.6%) of the total span of bridges are wooden or steel structures.

"4. Of the wooden bridges about 3600 lin. ft. or approximately forty-one per cent (41%) are in poor or dangerous condition.

"5. About 2700 lin. ft. or approximately thirty-one per cent (31%) of the wood bridges are in only fair condition.

"6. This leaves only twenty-eight per cent (28%) of the wooden bridges that are in good condition.

"7. The bridge funds have been largely used for new concrete bridges and the investment in timber and other bridges has not been protected or the rights and safety of the traveling public guarded by proper repairs to the existing structures.

"8. A number of the concrete structures are improperly located with respect to the grade line of the streams.

"9. A number of the concrete bridges are too short for the height of fill carried by them.

"10. The location and character of a number of bridges show gross neglect and incompetence from the standpoint of traffic requirements in the following particulars:

"a. Concrete bridges have been built on blind or closed roads.

"b. Concrete bridges have been built on little traveled side roads.

"c. Dilapidated and dangerous wooden bridges have been left without repairs on main traveled roads.

"11. There are numerous examples of concrete structures showing marked depreciation.

"12. The County apparently has no record of the size and location of the bridges built and the location as shown by the statements of the bridge company, are in a number of cases inaccurate."

The contrast between the loose methods of handling bridge funds by the Polk County board of supervisors and the plan adopted by the friends of the good road movement can best be understood by comparing the attorney general's outline of the case against the supervisor with the method of handling bridge funds as recommended by Professor MacDonald, the State Highway Engineer. The case, which would have been argued in open court except for the resignation of the defendant, was prepared under the following headings: over charges for board and committee meetings, conventions, etc., irregularities in official acts as a member of the board of supervisors; irregularities in personal acts and accounts as supervisor; indictable offenses, irregularities and incompetency in contracting, accounting and paying for bridges and culverts; incompetency, neglect and irregularity in not providing proper and competent engineering and supervision of bridge and culvert construction; incompetency, neglect and irregularity in choosing the particular type of concrete construction used; incompetency, neglect and irregularity in the administration of the road and bridge funds of Polk County, and particularly, of the third supervisor district; and incompetency, neglect and failure to comply with the Iowa statutes relative to

the construction and maintenance of bridges necessary for the safety and convenience of public travel.

In striking contrast with this formidable array of charges are the following suggestions of Professor MacDonald regarding the letting of contracts for bridge work:

“The structure should be designed by a competent bridge engineer; the letting of the contract should be conducted under the supervision of said engineer; never ask contractors to bid on a bridge where each contractor is bidding on his own plan; demand sealed bids on one design only; on small jobs have the county engineer put in a bid on the work for the county itself; consider only sealed bids and require a substantial deposit with each proposal; see that the county gets what it pays for; a competent inspector should be maintained on the work who will see that the provisions of the plans and specifications are rigidly enforced; each and every member of the bridge must be inspected and particular attention must be given to the following: a. concrete — to see that it is properly proportioned, mixed and deposited. b. pile driving — to see that the piles are of proper size and have sufficient penetration. c. all tension members must be uniformly stressed. The bridge should receive a test load in order to determine whether or not it is sufficiently strong for the purpose intended; in the event the bridge is to be paid for on a percentage basis, complete and itemized accounts should be furnished, showing materials used and labor performed, and these should be carefully checked; and a guarantee should be required of the contractor.”

A reading of the two methods of conducting public business will carry a conviction of the necessity of providing for expert advice and counsel where it is necessary and placing the administration of road and bridge funds on an economical and scientific basis.

This case, however, did not come to trial. Consequently all the evidence was not presented and perhaps will never be known to the public. The supervisor filed his resignation on March 15th, giving to the press a detailed statement of his reasons for doing so which were in part as follows:

“I am comparatively a poor man. I do not have the money to pay the expense that will be imposed upon me. I could only obtain the money by mortgaging the little farm owned by me, which represents the accumulation of a life time. . . . I must employ engineers and experts and pay them and after the protracted and expensive investigation of the subject the question will still be one of judgment and opinion, one set of experts expressing one line of opinion and judgment and the other set of experts the opposite, and the final question will be one of judgment pure and simple.”

One can hardly read the evidence brought out in the press, and especially the evidence contained in the elaborate brief prepared by Attorney General Cosson, without believing that the final question was really a plain question of clearly established facts. Two Polk County supervisors resigned before their cases came to trial, and thus ended the first elaborate exposure which has ever been made in the State of Iowa of careless and wasteful methods that ought not to be followed in conducting any public business.

Along the same line, it will be of special interest to Iowa taxpayers and to the members of the Thirty-fourth General Assembly to learn that similar proceedings are now being instituted in Clinton County. A petition, signed by fifty-five of the prominent citizens of that county, requested the grand jury to make a careful investigation of the letting of bridge contracts during the last five years, "to ascertain whether the prices were reasonable or excessive, and if excessive to fix the blame for such excess." Grave irregularities have repeatedly been charged against the supervisors of Clinton County in connection with the letting of bridge contracts without competition to a certain bridge company.

The State Highway Commission was promptly employed to make an investigation of the bridges in Clinton County similar to the one which they had already made in Polk County. The investigation has shown an extremely deplorable state of affairs. It is interesting to note that one of the chief individuals being investigated was chairman of the Supervisors' Association during the session of 1911, and in that capacity was closely associated with the Polk County board of supervisors in their efforts to defeat the good road bills then pending before the General Assembly. Following the example of the Polk County supervisors, this gentleman recently filed his resignation as a member of the board of Clinton County.

It is apparent that the last eight years of the history of road legislation in Iowa have been characterized by two distinct forces. First, there has existed a reactionary tendency directed against the Anderson law of 1902 which provided for the consolidation of road districts on the basis of the civil township, the appointment of one township road superintendent, and the payment of road taxes in money. This reactionary tendency resulted in the Zeller law of 1909, authorizing the division of a township into road districts, the election of road district supervisors and the payment of one-half of the road tax in labor. The other force has been the progressive good road movement which has had for its purpose the payment of all property road taxes in money, the enlargement of the county road fund together with the appointment of a trained county engineer, a state aid policy, and,

finally, the strengthening of the powers of the State Highway Commission. Coupled with this dual tendency toward progress on the one hand, and reaction on the other, there appears a more distinct line of separation between township and county functions, judged from the standpoint of road supervision and control.

Indeed it may be said that at the present time there are at least three distinct spheres of authority in road matters which will be generally recognized both by the practical man and scientific investigator; first, state functions; second, county functions; and finally, township functions. It is hardly necessary to observe that the local road district, or sub-division of a civil township, is an antiquated and altogether useless relic of pioneer conditions.

With reference to the reactionary tendency of the period under consideration, it will be recalled that persistent efforts were made, first in 1904, then in 1906, again in 1907, and finally in 1909 to amend the Anderson law. These efforts failed in 1904, but in 1906 it was provided that the number of township road superintendents might be increased from one to four. The pendulum of reaction and pioneer road philosophy, however, reached its climax in the bill introduced by Representative Zeller in 1909, which, as finally enacted into law, authorized a multiplicity of road districts, the election of local road supervisors, and the payment of one-half the property road tax in labor — all of which provisions were modeled upon the road legislation of 1853. Indeed, a somewhat more up-to-date system of highway administration than that represented by the Zeller law may be found in the statutes of the Territory of Michigan in 1833 — five years before Iowa was set apart as a separate Territory by act of Congress. In other words, the men who fathered this particular legislation were unconsciously following in the footsteps and thinking the thoughts of their pioneer ancestors.

The spirit of real progress, however, has made greater and greater efforts to overcome these reactionary tendencies. The 1904 session of the General Assembly not only defeated the strenuous effort made to return to the sub-district system, but it took a most important forward step by creating a State Highway Commission. It will be generally admitted that the law which established a State Highway Commission marked an important turning point in the history of road administration in Iowa. Up to the present time this Commission has only been given authority to collect certain data and furnish expert advice when requested to do so. While the appropriation for the support of the Commission has been wholly inadequate to produce the best results even from the standpoint of expert service, it may be said that a vast amount of useful work has already been accomplished. Since 1904 efforts have been made to enlarge the powers

of the Commission, to secure additional appropriations, and in fact to provide a comprehensive system of State aid. Indeed, the State Highway Commission has already become the banner of reform along the line of efficient road administration in a large group of states. But the good road movement embraces vastly more than the creation of a State Highway Commission.

The county is generally recognized throughout the United States as being a very important unit of local government along many lines, including the supervision of highways. Indeed the county is a necessary connecting link between the civil township on the one hand, which has always possessed large powers and authority, and the State on the other. Moreover, it is a large enough area and possesses sufficient taxable property to purchase expensive road machinery, construct bridges and engage in the work of permanent highway improvement. When we consider that the township is too small a unit of local government to undertake improvements which require large expenditures of money and the employment of expert service, it is apparent that if these important functions are to be kept close to the people, and thus preserve the maximum amount of local self-government, the county should be made a more important unit of road and bridge administration — especially from a fiscal standpoint. These considerations are at the basis of the demand which has been made again and again for creating the office of a county road engineer.

In view of the vast sums of money which are annually expended in every county of Iowa, either by the county board of supervisors or the various township trustees, and the necessity of using this money to the best possible advantage in constructing culverts, reinforced concrete bridges, and building permanent roads, the advantage of having a trained civil engineer and practical road builder to prepare plans and specifications and supervise work must be apparent to every thoughtful man. Indeed, Professor J. W. Jenks, writing for the American Economic Association nearly a quarter of a century ago, recognized the obvious fact that it requires the same engineering skill to construct bridges and build permanent roads as to be a railroad engineer. Until trained experts are employed, the townships and counties will continue to waste at least one-half of the people's money raised in the form of taxation for this class of work.

At the same time the important functions of the civil township in road matters should neither be overlooked nor underestimated. In view of the fact that except for the short period from July 1, 1851, to February 2, 1853, the township has possessed large powers and authority from the very beginning of our Territorial history, it may reasonably be assumed that it will continue to exercise a large amount of influence for many years to come. Indeed, it is a fact that the civil township has a logical sphere

of authority in the actual supervision of road work. Nor is this sphere of authority any less now than it has been in the past. A careful historical analysis of Iowa road legislation reveals the fact that the civil township has always been the important division of local government for the maintenance of the public highways. In other words, while the county has had charge of the laying out and the opening of roads and now possesses considerable financial authority, the township trustees have been responsible for the actual direction of road work.

Furthermore, it should be stated in this connection that actual road work in the past has almost universally meant simply the maintenance of ordinary dirt roads and not the building of what are generally known as permanent roads. When we consider that this is likely to remain a very important function, it is evident that the township will continue to occupy a position of substantial influence in the future. The problem of reform along the line of road administration does not consist, therefore, in subtracting powers from the civil township but rather in adding new duties or new functions to the county on the one hand and the State on the other. Considered in the light of practical legislation this fact is of great significance because it undermines the force of the arguments which have been so frequently advanced for the alleged preservation of local self-government. In a system of highway administration, reorganized along strictly scientific lines, it is believed that the civil townships may exercise even larger functions than they have been able to perform in the past.

Thus it is obvious that when we come to differentiate between township, county, and State functions, we will find that the civil township is destined to remain an absolutely essential part of the more comprehensive State wide administrative organization. The appointment of a township road superintendent responsible to the township trustees and having jurisdiction in the field of road maintenance — especially the dragging of the public highways — is significant in this connection. It is believed that a township road superintendent should be appointed by the township trustees, that he should be clothed with larger powers and authority, and that a larger fund should be raised for the purpose of road dragging. These considerations emphasized the important administrative duties of the township — duties which it is believed have a logical place in a scientific system of road administration.

This summary, however, would be incomplete without making a brief reference to the recent investigation of the Polk County board of Supervisors and also to the conditions in Clinton County. It is indeed significant that the leaders of the supervisor and bridge company lobby, which defeated good road legislation in 1909 and again in 1911, have been completely discredit-

ed. The activity of certain bridge companies and other producing corporations, interested in selling the maximum amount of road material at satisfactory prices, in defeating good road legislation is now a matter of universal knowledge. It is to be hoped that the old time plea for the "rights of local officials" and "the liberties of the people" will be understood in its true light at future sessions of the General Assembly.

CHAPTER III

COMPARATIVE STUDY OF ROAD LEGISLATION

According to a recent editorial in a leading Iowa paper "the United States is estimated to be paying out about \$1,000,000 a day, in different jurisdictions, for road improvement. It is estimated authoritatively that about one-half of this sum is utterly wasted." While this estimate of the amount of money now being expended for roads is obviously exaggerated, one is not so sure that the same can be said regarding the estimate of the proportion being wasted under present systems of road administration.

When the first general road congress assembles at Atlantic City late in September, a large number of road organizations — national, State, and local — will coöperate in making a thorough and comprehensive presentation of the whole problem of road administration in the United States. The main purpose of the approaching national road convention, however, is to discover the ways and means of stopping the tremendous drain of road revenues, which is becoming greater and greater every year without producing tangible results in the form of permanent road improvement. In short, the congress will consider the highway and bridge problem from an educational, economic, administrative, and engineering standpoint. The deliberations of this congress will afford an excellent opportunity of contrasting the intelligent and sympathetic interest now manifested in the good road movement with the spirit of indifference which prevailed quite generally only a few years ago.

As already stated, in the course of the preceding historical study, the problem of road legislation throughout almost the entire history of Iowa has been largely one of local government and administration. The fact that road improvement requires on the one hand a constant application of the principles of engineering science and on the other is closely related to almost every aspect of educational, social, and economic life did not occur to the pioneers of Iowa, or in truth to the pioneers of any of the American commonwealths. In a general way that which

has been true of Iowa has likewise been true of the older States — even of the thirteen original Colonies.

It is a matter of common knowledge that our colonial ancestors inherited many of their institutions from the mother country. This was especially true of the institutions of local government. While many old forms were discarded — that is, while old principles were adapted or reshaped to meet the more liberal demands of pioneer life — the fact remains that the system of local government which existed in England during the seventeenth century seems to have determined at least the general outlines of legislation and administration in America. Since the whole question of roads and bridges is primarily one of township and county organization, the influence of the mother country in shaping pioneer road legislation will be apparent.

The first road law enacted in America was by the Virginia House of Burgesses in 1632, and was based on English precedents. Other road laws followed — including one in 1662 which had for its object “the maintenance of highways in good condition.” Surveyors were appointed to establish a system of highways, including convenient roads to the church, the courthouse, Jamestown, and between the different counties. Each surveyor was assigned certain definite work to be performed, which was done under the jurisdiction of the county court in coöperation with the clerk and church wardens of the parish who were required to enforce the law. In other words, the parish, which developed as a local unit of church administration, exercised a large measure of jurisdiction over roads and bridges.

Other colonies followed the example of Virginia by enacting definite road laws. Maryland passed its first road act in 1666, although actual road building had commenced at a much earlier date. Laws along the same line were also passed in 1696 and 1704 — the latter remaining in force until after the Revolutionary War. In New England the oldest road connected Plymouth with Boston and was established by the General Court in 1639. In New York, road legislation dates from 1664, when the English under leadership of the Duke of York had possession of the colony. In Pennsylvania it appears that William Penn placed roads under the jurisdiction of the county courts, but in 1692 the authority was transferred to the township. This in turn was followed by an act in 1700 giving the county justices a large measure of jurisdiction over the laying out, opening, and maintaining of highways. Finally, roads were constructed and road legislation passed in the southern colonies during the period just preceding the Revolution.

At the close of the Revolutionary War the westward movement of the American people began in earnest. The settlement of larger and larger areas of land beyond the Alleghany moun-

tains rendered necessary improved means of communication between the East and the West. Even before independence was realized some of our leading statesmen understood the importance of building highways, that is, of creating what George Washington and Benjamin Franklin referred to as ties of commercial intercourse between the old and the new sections of the country. It soon became evident to these men that without means of communication the economic progress of the country would be greatly retarded. In fact, during the period just following the Revolutionary War national unity itself depended, in the last analysis, upon the building of a system of roads across the mountains, connecting the Ohio valley with the Atlantic sea-board.

In the beginning the toll road was the most popular form of highway construction — that is, the so-called turnpike road, financed in some cases by private corporations, in others by States, and finally by the national government itself. During the first half of the nineteenth century the building of turnpike roads was quite general throughout all of the states. As early as 1808 the State of New York had sixty-seven turnpike companies with a capital of about \$5,000,000 — nine hundred miles of such highways being completed and two hundred additional miles in process of construction. Twenty years later Pennsylvania had one hundred sixty-eight companies, with two thousand three hundred eighty miles of improved road already completed at a cost of nearly \$8,500,000.

During the same period the national government also took a very active interest in the building of highways, and numerous appropriations from time to time were made by Congress for the purpose — the total amount of such appropriations being about \$14,000,000. The so-called "Cumberland Pike" was the most important of these national projects, extending as it did from Cumberland, Maryland, to a point which gradually moved westward until it reached Illinois. It should be stated in this connection that there was always more or less doubt in the minds of some leading statesmen as to the constitutionality of a system of internal improvement supported by the general government.

The coming of the railroad as a practical factor in transportation gradually supplanted the whole turnpike system of highways. Although toll-roads had never been a real success from a financial standpoint — it being claimed that none of the numerous toll-roads of Pennsylvania had yielded a profit — the system was very beneficial, both to the agricultural and commercial interests, before the coming of the railroad. Many permanent highways were constructed, making, in conjunction with canals and other internal waterways, a fairly comprehensive system of transportation, without which the rapid and successful taking-up and im-

proving of free or cheap lands would have been impracticable if not impossible.

After the Civil War the general government discontinued its policy of participation in the work of constructing permanent highways. Congress was busy endeavoring to pay off the national debt and seems to have forgotten all about the question of roads and road administration. In the second place, turnpike companies, for reasons already suggested, had almost entirely passed out of existence. Nor were the various States giving any aid or attention to the subject. In a word the administration of highways ceased to be in any real sense either a national or State function, but was transferred to the various local units of government.

This fact should not be forgotten by the student of road legislation and administration. Prior to the building of railroads the necessity of constructing permanent highways to serve as ties of commercial intercourse, first, between the different sections of the whole country, and second, between different parts of the same State, was evident to the general public. The economic progress of the country and the preservation of the Union itself depended upon easy means of transportation. Thus the necessity became apparent both to the federal government and to the various States of taking an active interest in promoting this work.

When transportation for long distances was solved by highways of steel, the turnpike road, constructed either by private corporations, or by States, or by the national government became logically a thing of the past. In other words, road administration, as a logical result of actual conditions, became merely a function of local government, and was destined to remain so until practically the close of the nineteenth century.

Referring to the fact that on the 2,151,000 miles of public roads which the United States had in 1904, only 7.14 per cent of which was improved, the total expenditure for that year was \$79,000,000, Mr. Logan Waller Page says:

"This entire fund was administered under the system of localized control so long in vogue throughout the country, and it was largely due to this system that so little in the way of good results was accomplished, for the reason that it fails to insure skilled supervision, provides an inadequate revenue, depends upon a purely unskilled and unreliable class of labor, and practically precludes any construction of a permanent character."

One of the earliest, if not the first, comprehensive and thoroughly scientific studies of road legislation was made by Professor Jeremiah W. Jenks in 1889, at that time a member of the faculty of Knox College at Galesburg, Illinois. In a contribution entitled *Road Legislation For the American State*, published by the American Economic Association, Mr. Jenks referred to

the deplorable condition of our highways and lamented the wasteful expenditure of public moneys for this purpose — both of which conditions he attributed in a large measure to the decentralized and inefficient system of local administration. Concerning the growth of railroad systems as related to the question of ignoring the improvement of highways, Professor Jenks said:

“The principal reason for this comparative neglect of the common roads in nearly all countries is, of course, to be found in the astonishing growth of the railway systems, and, since the invention of the steamboat, of commerce by water. These have rendered unnecessary long roads, such as the ancient Aztecs and Romans found it wise to build for commercial and military purposes.”

The importance of paying road taxes in money rather than in labor, the necessity of employing experts (especially a county engineer and a State highway commissioner in order to make more efficient the whole system of highway administration), and the importance of a careful classification of roads on the basis of a definite scientific plan are all clearly presented in this monograph. It is certainly an interesting and instructive fact that nearly a quarter of a century ago Professor Jenks advocated a State highway commission and a county engineer — that is to say, the employment of experts where experts are necessary for the purpose of solving the road and bridge question.

Efficient administration of the law was recognized as the only means of preventing needless waste in the expenditure of public moneys and of gradually securing the construction of a comprehensive system of permanent roads. “To build and repair to the best advantage all the main roads in any fairly well settled county,” said Professor Jenks, “requires certainly as much skill in an engineer as to lay out and build a railroad through an ordinary county, and probably more. The problem is not so much that of making good roads, as that of making the best roads possible with the limited means given.” It was also stated in this same connection that the intelligent administration of the county road fund made the services of a skilled engineer indispensable. In other words, expert service was necessary, first, in order to secure the establishment of an equitable system of taxation, and second, for the purpose of insuring a wise and economical expenditure of public moneys.

At the time the monograph was written (1889) the road commissioners of Illinois recognized that at least one-half the money tax expended for roads in that State was wasted through ignorance or carelessness — the same being true also of a much greater portion of the labor tax. In the judgment of Professor Jenks this criminal waste, which amounted to more than \$2,000,000, not including the loss resulting from poor roads, could be

largely prevented by a State highway commission and a system of county road engineers.

The cause of the deplorable conditions of the roads and the almost criminal waste in public expenditure for highway purposes are presented in terms which cannot be misunderstood. "To our early circumstances then; to the comparative lack of interest in local affairs; to the conservative spirit of our people, combined with the influence of the form of the law itself in hindering them from noting the changing circumstances in their relation to such matters; and to the strong bent of our people toward the retention of local powers, may, in great part, be attributed our present defective system."

Only two years after the publication of this instructive monograph the policy of State aid for the construction of permanent highways was first adopted by the State of New Jersey — which meant that a new movement along the line of more centralized State administration of roads and bridges had been inaugurated. Since the New Jersey State Highway Department was established in 1891 one State after another has followed the example, until today thirty-seven out of the forty-eight States in the Union have adopted this same principle in one form or another. During the last year four new States (namely, Alabama, Oklahoma, South Dakota, and Wyoming) have provided for State aid. According to Mr. Page, the movement is still progressing very rapidly, and nine other States of the eleven not having yet enacted laws on this subject have bills pending before their several legislatures.

It should be noted, however, that State aid so-called does not always refer to actual money appropriated for the improvement of highways. A number of States, like Iowa, merely provide highway departments for giving engineering advice and assistance. Other States furnish convict labor; and still others supply some combination of money aid, expert engineering service, and perhaps convict labor. The important problem of State aid in whatever form it is granted, together with a number of miscellaneous questions connected with the general subject of road legislation and administration, can, however, best be presented by making a brief comparative study of the progress made in the various States.

ALABAMA

The State Highway Commission consists of a professor of civil engineering in the Alabama Polytechnic Institute to be selected by the governing board of the institute, the State Geologist, and three civilians to be appointed by the Governor for a

term of four years. The Commission is required to appoint a competent civil engineer to serve as State Highway Engineer at an annual salary of not more than \$4,000.

An annual appropriation of \$154,000 has been authorized for State aid — not including the \$10,000 for office expenses, which sum may be increased to \$20,000 at the discretion of the Governor. The State Highway Engineer is required to prepare and keep a general highway plan of the State, collect statistics relative to the mileage, the character, and the condition of highways and bridges, have general supervision of the construction and repair of all roads and bridges improved under the State aid law, furnish a competent engineer where needed during the progress of the construction in any county, who is required to see that all work is done according to plans and specifications, and finally make a map within two years of such of the main highways in the State as should be improved and maintained at the cost of the State in coöperation with the counties. All contracts must be let by contract to the lowest responsible bidder, subject to the approval of the State Highway Commission. Indeed the Commission is clothed with very large powers and authority both as to the improvement and as to the maintenance of all public highways which receive the benefit of State aid.

Since in all of the southern States the county is the important unit of local administration it is not surprising that in Alabama public roads, bridges, and ferries are placed under the jurisdiction of what is called the court of county commissioners, who may divide the county into a convenient number of road districts, each district being placed under the jurisdiction of an overseer, and may also appoint a county supervisor of roads, who shall be a competent civil engineer, to prepare surveys, maps, plats, and plans of the public roads, and superintend the work of overseers, contractors, employees, and road hands.

All able bodied men between eighteen and forty-five years of age, unless exempt by law, are liable to work on the highways not to exceed ten days a year or commute for the same by the payment of not more than ten dollars in money. The statutes further provide that counties may also be divided into road districts for the purpose of ordering an election on the question of levying special road taxes. While a majority vote decides this question, the court of county commissioners does not have the authority to levy a tax of more than one-fourth of one per cent on the assessed value of property for road purposes. Finally, convict labor in any county or municipality is provided for by the statutes of Alabama, and the court of county commissioners is authorized to transfer from the county treasury any surplus not needed for general purposes.

ARIZONA

A State Highway Engineer is appointed by the Governor with the consent of the Council for two years and receives an annual salary of \$3,000. The State Board of Control, composed of the Governor, Auditor of State, and one other person, must require the State Engineer to select maps and furnish estimates of the cost of State highways, and at the same time designate such roads as are deemed proper and expedient to be improved and maintained as State highways. All contracts for work on State highways must be let by contract to the lowest responsible bidder subject to the approval of the Board of Control. All State highways and bridges are constructed and maintained entirely at the cost of the State, out of a fund obtained by the levy of a tax of not more than one-fourth of one per cent on all the taxable property of the State.

From the standpoint of local administration the county board of supervisors is required to appoint a county superintendent of roads, who shall have charge of all public highways in the county, subject to the control of the board of supervisors. Aside from the State levy already noted, revenue for the support of roads and bridges is obtained by a poll tax of two dollars, payable in cash, and a county levy of not more than one-fourth of one per cent on the assessed value of all real and personal property.

ARKANSAS

The public roads are placed under the supervision of the county court, which is given authority to divide the county into road districts, appointing one overseer for each district. In counties where a road tax is levied or where the county prisoners are required to work upon the public highways the working of roads may be let by contract to the lowest responsible bidder and a county road commissioner appointed and paid a reasonable salary. When this system is adopted roads are classified by the county road commissioner, who is also required to prepare plans and specifications for bridges and for any permanent improvements that may be necessary. In counties adopting the contract system all contracts are awarded by the county judge and county road commissioner. Finally, it should be stated that the county court also has the option of declaring each township a road district, the road overseer to be elected in the same manner as other township officers.

In addition to the property tax levied for road purposes, all able bodied men within certain ages are required to work on the roads of their township four days out of each year, or commute for the same at the rate of one dollar per day. The levy of road taxes must be submitted to a vote of the people at the regular

election held of county officers. If a majority vote is cast in favor of such a tax, the county court, together with a majority of the justices of the peace, may levy not less than two and one-half nor more than three mills on each dollar of taxable property in the county.

One unique provision of the road legislation of Arkansas is that giving the county court power to establish road improvement districts. Before this can be done, however, it is necessary to file a petition signed by a majority in value of the land owners of the county. Where road improvement districts are established three directors are elected by the land owners and are given general supervision and authority to construct and maintain, by contract or otherwise, all roads in their district and to expend for this purpose an amount not to exceed twenty-five per cent of the value of the property in their district. They are also authorized to issue bonds, the amount of which shall not exceed twenty per cent of the value of the property. This act, however, applies to only thirty-eight out of the seventy-five counties. Finally, the General Assembly of Arkansas in 1911 created the office of County Highway Engineer, said officer to be appointed by the county court and vested with general supervision of all the public roads of the county.

CALIFORNIA

In 1907, the legislature created a State Highway Department, to consist of the Governor, the State Engineer as chief executive officer of the department, the chief superintendent of state hospitals, and the chairman of the board of harbor commissioners of San Francisco. The State Engineer is appointed by the Governor with the advice and consent of the Senate, for a term of four years, receives a salary of \$4,800, and is given complete charge of the engineering work of the department.

The State Department of Engineering has full control of all so-called state highways and of all moneys expended by the State for the improvement of roads. It supplies, without charge, information to road authorities upon request, collects data regarding suitable road material, publishing the same in bulletin form, may obtain rights of way by purchase or condemnation, and finally may appoint superintendents of State highways.

Prior to 1910 California had made no direct provision for State aid, although the State had built roads through the mountains and sparsely settled districts where the people were not able to meet the expenses of construction. In 1909 the legislature, however, passed an act submitting to the people at the general election of 1910 a proposition to vote bonds to the amount of \$18,000,000 for the building of permanent State roads. The

bond issue was approved, thus placing California near the top of the list of good road States.

The general control of highways is vested in the county board of supervisors, which may form road districts for permanent improvements, issue bonds and levy special taxes to pay the expenses of such work. The county supervisors also are given power to appoint a competent person to act as engineer. It should be noted, however, that the power of the board to establish such road improvement districts and to construct gravel, macadamized, oil, or otherwise improved roads, cannot be exercised in case an objection is made by a majority of the land owners.

Bonds may be issued to promote permanent improvements, the same to extend twenty years, bear not to exceed seven per cent interest, and be paid for out of funds secured partly by the county and partly from a special district tax. In other words, the county board in such cases must transfer from the general county fund to each improvement district an amount which in their judgment is a fair proportion of the road fund of the supervisorial district in which the improvement is located. All highway taxes are required to be paid in cash and the county board of supervisors may levy an annual property tax of not to exceed four mills on the dollar on assessable property. In addition to the property tax every male person between the ages of twenty-one and fifty years is required to pay a road poll tax of three dollars unless specifically exempted by law.

In the report of the State Engineer dated 1910, it is stated that the law creating the State Highway Department enacted in 1907 was so amended as to concentrate more power and authority in the hands of the State department. "It is but reasonable to suppose," reads the report, "that, where the work is spread among a number of boards, you cannot get uniformity, and you cannot get the best results, nor can you get the best economy." Reference is also made to the necessity of granting the Department of Engineering the full power of awarding contracts for the construction of the various works of the State. Indeed, the large powers granted the State Highway Commission, on the one hand, and the issue of \$18,000,000 in bonds, on the other, have been primarily responsible for the great improvement of the public highways in California.

COLORADO

In 1909 the legislature of Colorado created a State Highway Department, the commission to consist of three members appointed by the Governor for six years, the eastern, central, and western sections of the State each having a representative on the board. The commission employs a secretary, who must be a

trained civil engineer, at an annual salary of \$2,500, and is given authority to apportion the State aid fund among the counties, to prepare maps showing the location of all State aid roads, as well of all public roads, to ascertain the location of road material, to prepare rules and regulations for the improvement and maintenance of State roads, to make all necessary changes in any surveys, plans, and specifications prepared by the various boards of county commissioners, to exercise general supervision over all local boards, approve contracts for work upon State roads before being let by the county commissioners, and finally, to receive annual reports from all of the various county boards.

According to the provisions of the same act, the county commissioners are required to prepare a map of their respective counties showing the roads considered sufficiently important to receive State aid, a copy of said map being filed with the State Highway Commission. Accompanying the map must also be a statement of the location of suitable road material within the county. Not later than January 1, 1912, the law requires that the highway commission must have completed a road map of the entire State showing all open public roads, and, in a different color, all roads considered by the commission of sufficient public importance to receive State aid. This work being accomplished it is made the duty of the commission to divide State aid roads into two classes, primary and secondary, the primary roads to be improved first. For the purpose of State aid the sum of \$50,000 was appropriated.

The board of county commissioners has control of county roads, may divide the county into suitable road districts from time to time, appoint annually a road overseer for each district, and may levy a maximum property tax of one dollar for every one hundred dollars of valuation for road purposes. The county commissioners are further clothed with authority to create an indebtedness for the building of roads and bridges when the same is authorized by a majority of the voters of the county. All property taxes must be paid in cash, but the road poll tax of three dollars may be paid by performing two days' labor on the highways. Finally, State prison authorities are authorized to work convicts on State roads.

It should be noted, however, that properly organized road districts, so-called, are made bodies corporate. In counties organized on that basis the office of road overseer, already noted, is abolished and in lieu thereof the county commissioners are authorized to appoint a superintendent of roads and bridges, who is given charge of the construction and maintenance of bridges, and of those roads coming under the jurisdiction of the commissioners. Furthermore, what amounts to a third system of local administration is provided for in case a petition is filed, signed

by a majority of the qualified electors. The county commissioners may organize any county into road districts, three directors being elected by popular vote for each district, who are given supervision of all roads and bridges except those under the jurisdiction of the commissioners themselves.

CONNECTICUT

The State of Connecticut has been very progressive in the matter of providing for good roads and an efficient system of road administration. The State Highway Department is under the supervision of a highway commissioner appointed by the Governor for a term of four years, who must be an experienced road builder and who receives an annual salary of \$5,000, together with his actual and necessary traveling expenses. The highway commissioner is required to appoint one deputy, eight division engineers, and such other assistants as from time to time may be necessary to make surveys, plans, specifications, and maps. The State is divided into eight highway districts, one division engineer being assigned to each district.

It is made the duty of the highway commissioner to designate highways to be constructed or improved in towns where the same are desired; keep in repair roads built by the State, one-fourth of the cost, however, of such work being charged to the town; maintain in good condition all State aid roads; and let contracts for permanent road improvements. In case the selectmen refuse to carry out the vote of their town for a State aid road, the highway commissioner is vested with authority to enter the town and perform this duty, a power which obviously represents a large measure of centralized control. As an additional example of State supervision and control it should be noted that prior to 1907 all contracts for State aid roads had been let by the selectmen of the towns, but under the new law this very important power was vested in the State Highway Commission. In other words, from the standpoint of letting contracts, building permanent roads, and keeping the same in repair, Connecticut within recent years has developed a very large measure of State supervision and control of highways.

Connecticut also provides very liberally in the way of taxes for the support of roads. As has already been suggested the salary of the highway commissioner is \$5,000 per annum. In addition to this he is allowed \$8,000 annually for office expenses. An appropriation of \$29,000 has been made for the salary, traveling and office expenses of the highway commissioner; \$50,000 for engineers, deputies, and inspectors; and \$5,000 for the operation and maintenance of State crushing plants and \$50,000 for making repairs on public roads.

Considering the fact that in addition to the liberal appropriations for expert services in road building, the State has also authorized the issuing of \$4,500,000 in bonds to be expended under the direction of the State Highway Commission at the rate of not to exceed \$750,000 per annum, it is apparent that Connecticut should be placed among the list of good road States. The relative appropriations given to the towns by the State for the construction of State aid roads have also increased. Prior to 1907 the State had paid two-thirds or three-fourths of the cost, depending upon the taxable valuation of the town, but under the new law the State now pays three-fourths of the cost in towns having a taxable valuation of over \$1,250,000, and seven-eighths of the cost in towns having a lower taxable valuation.

From the standpoint of local administration, authority is vested partly in the counties and partly in the several townships. Towns at their annual meetings provide for the repair of highways. If the towns, however, neglect to repair their highways the county commissioners have the power to order the repairs made, and in case the selectmen refuse to do the work the same may be done by the county authorities and the cost collected from the town. Any town is authorized to issue bonds if it has incurred an indebtedness of more than \$10,000, but the rate of interest must not exceed six per cent. Finally, the State requires that all property taxes shall be paid in cash.

DELAWARE

There are only three counties in the State of Delaware: Kent, Sussex, and New Castle. The Governor, subject to the approval of the Senate, appoints one State highway commissioner for New Castle County and also one for Kent County, each at an annual salary of \$1000. The Levy Court of New Castle County also appoints a county commissioner at a salary of \$2500 per annum. This rather unique arrangement is obviously the result of certain local conditions prevailing in Delaware. In all three counties general authority or jurisdiction over highways is vested in the levy courts, which are required to appoint one road supervisor for each hundred, a local unit of government which in a measure resembles the civil township. In New Castle County the State Highway Commission and the Levy Court have joint supervision and control of both State and county roads.

The highway commissioner reports bienially to the legislature, is required to give his consent before State aid money is paid, has charge of all work after the contract has been awarded and appoints a supervisor of construction whose salary is paid by the Levy Court. It is further made the duty of the commissioner to investigate the most practical methods of constructing roads,

make an estimate of cost, and prepare plans and specifications. One-half of the cost of all State aid roads is paid by the county and the other half by the State, the present annual appropriation being \$30,000. All road taxes levied in New Castle County must be paid in cash.

FLORIDA

Jurisdiction over roads and bridges is vested in the board of county commissioners, each commissioner's district being considered a road district. The county board appoints three persons in each road district as commissioners of roads and bridges, and may appoint a county road superintendent to supervise and direct the building and repairing of all public roads in the county. It is made the duty of the road commissioners to lay off the roads in their respective districts and to appoint overseers for each subdivision of the same.

The county commissioners in each county are authorized to levy a road tax not to exceed five mills on the dollar of assessed valuation of real and personal property, provided, however, that in counties not constructing paved, macadamized, or hard surfaced roads an additional road tax of not exceeding three mills may be levied to be used solely for the purpose of constructing roads. Counties are also authorized to issue bonds for road purposes, and every able bodied male person, not exempt by law, is required to work five days each year on the public highways or commute for the same at the rate of one dollar per day.

A law passed in 1911 authorized the formation of road improvement districts on a petition signed by not less than twenty-five per cent of the registered voters. In case said special road and bridge improvement district is formed, the board of county commissioners is required to prepare plans and specifications and let the contract for work to the lowest responsible bidder. Revenue may be obtained either by a special tax or by the issuing of bonds as determined upon by the people themselves. Finally, it should be stated that convict labor on the public highways is authorized by the laws of Florida, and the road legislation of 1911 provided for a progressive license tax on motor vehicles, the same to be paid into the road and bridge funds of the various counties.

GEORGIA

The board of county commissioners, or the so-called ordinary of the county court, has jurisdiction over the roads, divides the county into road districts and appoints three commissioners for each road district, who, in turn, are required to appoint road overseers. It is made the duty of road overseers to superintend work on the highways. A separate law, however, known as the

alternative road system, may be adopted by any county on the recommendation of the grand jury. In counties adopting this system, the board of county commissioners appoints a superintendent of public roads, together with necessary overseers and guards. All male citizens, not exempt by law, are liable to road duty not exceeding ten days per year, which tax may be commuted at the rate of fifty cents per day.

The new convict labor law enacted in 1908 has received considerable publicity and should be briefly outlined. This measure provides that all male felony convicts not required to be kept at the state farm may be employed by the authority of the several counties and municipalities upon the public roads, bridges, or other public works. It is made the duty of the Prison Commission to communicate with the county authorities and ascertain those counties desiring to use convict labor. The convicts are apportioned among the counties largely on the basis of population, but under certain conditions there may be exceptions to this rule. The commission is also authorized to purchase road machinery, appliances, and teams to organize road working forces. The county in which convicts are employed shall pay the expenses, including maintenance and equipment and all material required for the work which must be done in the county. All convicts are placed under the direct supervision of the Prison Commission, which is required to prescribe rules and regulations for governing the same, subject, however, to the approval of the Governor.

The convict labor law of Georgia has been responsible for a great deal of valuable work on the highways of that State. From the standpoint of the construction and maintenance of permanent roads, there is much to be said in favor of the plan. It should be stated, however, that prison reform workers and humanitarians in general have offered some very serious objections to this very important convict law, or perhaps more particularly to the manner in which it has actually been administered.

The public road fund is made up of the so-called commutation tax and a levy of not more than two mills on the dollar of taxable valuation, as determined by the commissioners of roads. All able bodied men, unless exempt by law, are subject to work on the public highways not exceeding fifteen days in a year.

IDAHO

Jurisdiction over roads and bridges in Idaho is vested first, in a State Highway Commission composed of the Governor, State Engineer, and State Mining Inspector; second, in the boards of county commissioners of the respective counties; and finally, in road overseers elected from road districts, the boundaries of which

are determined by the county board. The members of the highway commission serve without any salary, but are allowed their actual and necessary expenses incurred while performing their official duties.

The State Highway Commission has general supervision of all highways constructed in whole or in part out of the State aid fund, and is required to make an itemized report each year to the State Auditor of all disbursements, contracts, and transactions. In case the county commissioners refuse or fail to make repairs on any road subject to the jurisdiction of the highway commission, the latter may establish such road as a toll road for a period not exceeding five years.

Aside from the ordinary road districts determined upon by the board of county commissioners and placed under the control of road overseers, the law provides that any portion of a county with twenty-five or more resident taxpayers may be organized into a special road district. Special districts, as thus defined, are organized by the board of county commissioners after the project has been approved by the people at a district election. In special road districts, three resident good roads commissioners are elected and required to supervise the road work within their districts. The legislature in 1911 authorized the appointment of a county road supervisor by the board of county commissioners.

An annual property tax of not less than one nor more than six mills for road purposes is levied by the board of county commissioners. The board, however, may also levy a special road tax, not exceeding ten mills on the dollar on all taxable property.

In road districts, with the consent of two-thirds of the qualified electors, the road commissioners are given authority to issue bonds not to exceed twenty-five per cent of the assessed valuation of all real property within the district. Every male inhabitant between the ages of twenty-one and fifty is required to perform two days' labor annually on the road, or commute for the same by the payment of four dollars. All road taxes in contract districts must be paid in cash, and the board of county commissioners may require convicts to perform labor on the highways under special conditions. Finally, it should be noted that under recent acts appropriations have been made by the legislature to build certain special highways, as for instance an appropriation of \$5000 to complete the Atlantic road.

ILLINOIS

The State Highway Commission is composed of three persons appointed by the Governor, with the advice and consent of the Senate, the same to hold office for the term of two years, and receive no compensation except for actual and necessary ex-

penses. The commission is required to appoint a State Engineer, carries on experimental work in road building, investigates methods of construction, kinds of road material and systems of drainage best adapted to meet certain conditions, and prepares a uniform system of blanks to be used by local commissioners of highways throughout the State.

State aid is therefore given in the form of expert service, but in addition the State supplies stone, crushed at the penitentiary and reformatory institutions, and also road machinery. Local highway commissioners may apply for State aid, but if the same is granted they are required to use the material and machinery according to rules formulated by the highway commission.

The annual appropriation to the State Highway Commission is \$100,000.

From the standpoint of local administration a dual system of supervision and control prevails in Illinois. In counties having the township system, three highway commissioners are alternately elected for a term of three years. In counties having the county system of local government the county board creates road districts of convenient size, three highway commissioners being elected in each district. The highway commissioners, in either case, have charge of the roads and bridges of their respective townships or districts.

From the standpoint of revenue Illinois also has a dual and somewhat complicated system. About one-half of the townships of Illinois require the payment of road taxes in cash, the other half still permitting the payment of the same in labor. In townships under the cash system highway commissioners may levy an annual tax of not to exceed six mills, while in townships under the labor system the tax limitation is four mills. A township may also vote on the question of borrowing money for constructing hard roads, by issuing bonds, said bonded debt, however, not to exceed the sum of \$35,000. Finally, the Board of Prison Industries may be required by the highway commission to employ convicts in the manufacture of tile and culverts suitable for draining the wagon roads of the State, in the preparation of road material, and in the manufacture of machinery, tools, and other necessary appliances for the building and repair of highways.

INDIANA

Jurisdiction over highways in the State of Indiana is vested in the board of county commissioners and the township trustees. It is made the duty of the township trustees to divide their townships into four or six road districts, depending upon the area. A road supervisor is elected annually for each district. Said officer is required to construct and maintain roads and bridges

according to the directions of the township trustees, and to see that roads are properly dragged whenever their condition makes it advisable.

The system of raising revenue for highway purposes is somewhat complicated. A general tax of three mills is levied annually by the township trustees, and an additional tax of one mill may be levied for bridges, subject to the approval of the board of county commissioners. A further tax of one mill may also be levied for every ten miles of free, gravel, macadamized, turnpike roads completed in any county; provided that counties having less than fifty miles of such roads may be authorized to levy a three mill tax for road purposes in a sum not exceeding four per cent of the assessed valuation of the county. Both the poll and property road tax may be paid in either money or labor.

Bonds may be issued by the board of county commissioners to an amount not exceeding two per cent of the assessed valuation of the county. Free gravel roads may be constructed either by assessment, according to benefits received, or by taxation. If constructed on the basis of benefits received, the board of county commissioners appoints three disinterested freeholders, as viewers, and a competent engineer to lay out the proposed highway and assess both the benefits and damages; provided, however, that no lands shall be assessed for benefits that are more than two miles from the contemplated improvement. Indiana has practically an unlimited amount of stone and gravel, and, largely as a result of this fact, a very high per cent of permanent roads.

KANSAS

The State of Kansas does not have a highway commission, but has created the office of county engineer, and the State Engineer at the Agricultural College gives advice and prepares plans and specifications for roads and bridges. The county engineer thus appointed inspects all road work, classifies roads, investigates road materials in different sections of the State and prepares plans and specifications for bridges and permanent highway improvements.

When sixty per cent of the abutting land owners file a petition, the board of county commissioners may authorize the improvement of the highways under the direction of a superintendent appointed by them. In such cases seventy-five per cent of the expense is paid by the land owners and twenty-five per cent by the township; provided, however, that under certain conditions the county may pay a portion of the same. The township, in fact, is given considerable authority in road matters. All roads are under the control of the township board, subject, however, to the authority of the county engineer. In other words, there is

a dual system of township and county supervision in Kansas, much the same as there is in Iowa.

From the standpoint of revenue for road purposes, both the township and county are granted substantial authority. The county commissioners may levy an annual road tax of not more than three mills, except on real estate in certain cities. In the second place the county commissioners may also levy a tax of not more than one mill on all taxable property in each township; and at the same time the township board may levy a road tax of not more than three mills to improve the roads in the township. Moreover, what is called a good roads tax, of not more than one mill, may be levied by the county commissioners for a period of not less than five years, subject to the approval of a majority of the voters in the county, the income from which tax must be expended for the construction of hard surfaced roads. Finally, certain special assessments are authorized, county road bonds may be issued up to twenty per cent of the construction price of a permanent improvement, and a road poll tax of three dollars is levied which may be paid either in money or in labor.

KENTUCKY

The fiscal court, so called, of each county has general supervision of roads and bridges. The county judge divides his county into road precincts, and appoints a resident overseer to have general charge of the work in each precinct. In counties where the funds for the working of the roads are raised by taxation, the fiscal court may appoint a county supervisor, a plan similar to the system adopted in Iowa in the *Code of 1851*. The county road supervisor thus appointed lets contracts to the lowest bidder, inspects all road work, and may hire men to work under his own supervision in case he desires not to let the same on contract. It is made the duty of the overseers to assist the county supervisor and to look after the roads in their respective road districts.

The tax levy is placed in the hands of the fiscal court, which may levy a tax of not more than five mills annually for road and bridge purposes, and also a per capita tax of not more than one dollar for the support of the same fund. In addition to this the court may require all male citizens not exempt by law to work on the roads not more than six days in the year, and finally, provision is made for convict labor on the public highways.

An amendment to the Constitution of Kentucky authorizes the State to extend credit to any county for public road purposes, but limits the amount of indebtedness which a county may incur for this purpose to five per cent of the value of all taxable property located therein.

LOUISIANA

According to the provisions of an act passed in 1910 the State Board of Engineers is authorized and required to appoint a competent State Highway Engineer and fix his salary not to exceed the sum of \$5000 per annum. The State Board of Engineers is also required to appoint such assistant engineers and other help as may be necessary to establish, construct, and maintain public highways and bridges. Among other things, the State Engineer is given the right to reject any or all bids if a good cause exists. Otherwise he is supposed to award the contract to the lowest responsible bidder, the same to be subject to the approval of the police jury, or of the mayor and council, or other governing authority. With the approval of the State Board of Engineers he may also purchase, for the State, rock crushers, steam rollers, and other road machinery, tools, implements, and draft animals which may be needed for the purposes of highway construction. It is thus apparent that Louisiana has made great progress in the important work of road administration, and at the present time is entitled to the credit of being a good road State.

From the standpoint of local administration, public roads are placed under the jurisdiction of the police juries, who are required to divide their parishes into road districts and appoint an overseer for each district. Police juries are authorized to levy special taxes for road purposes on all real and personal property in the parishes, said tax to be limited to fifteen dollars per annum on each person. Under certain conditions negotiable bonds may be voted by a drainage district, parish, or municipal corporation for the purpose of paving and improving roads. Finally, all able bodied male citizens, unless exempt by law, are required to work not to exceed twelve days per annum on the public roads, or commute for the same at the rate of one dollar per day.

MAINE

A State Highway Department was created in 1907, the Governor being legally authorized, with the advice and consent of the council, to appoint one commissioner of highways, who must be a civil engineer, holds office for a term of four years, and receives a salary of \$2500 per annum.

The commissioner of highways is clothed with large powers and authority. First of all he must give his approval before work is commenced on any State road, and no State aid is paid until the work has been performed to his satisfaction. All bids are subject to his approval and he may appoint inspectors to supervise the construction of all roads which are built on the contract basis. Finally, the State Highway Commissioner is

required to compile statistics, prepare maps, plats, and in various other ways disseminate information as to the best methods of highway construction. In this connection he conducts annual meetings in each county to discuss the question of good roads.

A very comprehensive system of State aid has also been worked out in Maine. A State tax of one-third of one mill is levied on all property in the State, which tax in 1910 amounted to about \$131,000. In order to receive State aid, towns and other subdivisions of the State are required, each year, to set aside a certain part of the road fund for the permanent improvement of highways under the supervision of the State Highway Commissioner. The amount thus required depends upon the taxable valuation. For every dollar thus set apart by the various subdivisions of local government, the State gives from seventy-five cents to two dollars, depending also upon the taxable valuation. Where the taxable valuation is \$100,000 or less, the State will give two dollars for every dollar locally raised; where it is between \$100,000 and \$200,000, the State will give \$1.50; where it is between \$250,000 and \$500,000, the State will give \$1.25; and finally, where the taxable valuation is between \$500,000 and \$1,000,000, the State will give seventy-five cents for every dollar locally raised.

From the standpoint of local administration, jurisdiction over country roads is vested in the court of county commissioners, and over town roads in the selectment or municipal officers. The county commissioners are given authority to designate State roads, but upon petition signed by a majority of the local voters of a certain town this matter may be brought before the State Highway Commissioner. State roads, the same as other roads, when once completed are maintained by the cities and towns through which they pass. The county commissioners, however, may repair highways at the expense of the town if the latter declines or neglects to do so. Each town at its annual meeting elects from one to three road commissioners, who are required to go over the roads of their town and see that the same are in good condition and keep an accurate account of all expenditures made by them. Funds for the building and repair of roads and bridges are raised annually at the town meeting. All property taxes must be paid in cash and county convicts may be used to break stone for the repair of the public highways.

MARYLAND

The State Highway Department is composed of three competent persons paid a regular annual salary ranging from \$2000 to \$2500 per annum, and two men from the State Geological and Economic Survey, and the Governor himself, as ex-officio mem-

bers. The latter receive no compensation. The commission is authorized to appoint a chief engineer and as many assistants as are necessary.

Large powers and authority are conferred upon the highway commission, including the preparation of a definite plan or system of State roads, a map of the State, which must be filed with the county commissioner of every county, plans and specifications for permanent highway construction, which must also be furnished to the county commissioner. Finally, the commission is authorized to let contracts, supervise the work of construction, and must keep all State roads in good condition.

Bonds have been issued in the sum of \$6,000,000, not more than \$1,000,000 of which may be expended in any one year. It is also stipulated that not more than one-half of the cost of building a highway shall be paid out of the State treasury, the amount received by each county depending upon its mileage of roads as compared with the total mileage in the State. Local revenues for road purposes are levied by the boards of county commissioners. Some counties levy special taxes for road purposes and others use the general county fund for the building of roads. All property taxes must be paid in cash and the boards of county commissioners may authorize the working of county prisoners on the public highways. Finally, the license tax on automobiles is paid into the State treasury, one-fifth of the same being expended in Baltimore, and the remaining four-fifths being distributed among the counties, for repairs on State aid roads.

MASSACHUSETTS

Perhaps no State in the Union has made greater progress in the construction of permanent roads than Massachusetts. The State Highway Commission consists of three members, appointed by the Governor for a term of three years, at an annual salary of \$2500, except the chairman, who receives \$3500 per annum. The members are required to devote all of their time to the work, receive their necessary traveling expenses, and may appoint as many clerks and expert engineers as are necessary.

Among other duties the commission is required to prepare maps showing both the location of public roads and the places where the best road materials may be found. It is given full control over State highways, prepares plans and specifications for the same, accepts or rejects all bids, and is required to hold at least one public meeting in each county annually for the purpose of discussing the question of good roads.

In 1907 a bond issue of \$2,500,000 was authorized, not more than \$500,000 to be expended in any one year. In addition to this large amount of money for the building of permanent roads,

Massachusetts has made very liberal provision for the same purpose by taxation. For example, in 1908 the legislature appropriated \$150,000 for maintenance, in addition to \$85,000 which was available at the same time from the motor vehicle fees. The engineers of the commission estimated that over \$600,000 was necessary to put the State highways in good condition. In 1909 the legislature appropriated \$250,000 and during the same year \$154,000 was collected in motor vehicle fees. In 1910 the sum of \$316,000 was available from the tax on motor vehicles and the total amount spent for various permanent improvements was \$504,000, of which amount \$200,000 was available from the regular tax levy. In 1911 the commission received a direct State appropriation of \$200,000 for the maintenance of State highways, and it also had available \$300,000 from motor vehicle fees for the same purpose.

A county, city, or town desiring State aid is required to make application for the same, whereupon the commission prepares a plan which is filed with the local authorities. One-fourth of any money expended by the State for the construction of State roads must be returned to the State treasury, with interest at the rate of three per cent, the money thus returned being applied to the regular appropriation to be expended by the commission. Not more than fifty dollars per mile is assessed upon the town or city where a State road is located, to be applied for the purpose of maintaining and repairing the same.

From the standpoint of local administration the county commissioners have general authority over the highways of the various counties. At the same time the selectmen of the towns exercise both original and concurrent jurisdiction with the county commissioners over all highways located therein. Each town may annually elect a road commissioner or a surveyor of highways, the latter having exclusive control in the matter of repairs of roads and bridges, without being subject to the authority of the selectmen. Local funds for road purposes are appropriated at the annual town meeting, and the counties are required to assess on the towns the amount necessary to meet the State appropriation. No statute labor tax exists in Massachusetts, but convict labor may be employed within the various prisons under certain conditions and limitations.

MICHIGAN

The State Highway Commissioner of Michigan is nominated and elected by the people for a term of four years, and receives an annual salary of \$2500. The reader will note that this is an exception to the general rule which provides for the appointment of such officials, a method which, in the judgment of the writer,

is far better adapted to the peculiar functions and responsibility of such a department. The highway commissioner may appoint a civil engineer, and such other assistants as may be necessary.

The State Highway Commissioner possesses a large measure of supervision and control over the highways of the State. He may require local officials to report from time to time such facts as he may deem necessary, must furnish plans and specifications for State aid roads, prepare maps showing the location of highways and of road material, inspects road work, holds road conventions or institutes in the various counties which are attended by county and township highway commissioners, gives expert advice and sends engineers to the various townships and counties when justified by the importance of the work. Finally, the highway commissioner may withhold State aid if roads are not kept in good condition.

A regular system of State aid has been established. A county or township, or both acting together, may, under certain conditions, petition the highway commissioner for the improvement of a certain road or roads. The allotment to any township or county, however, is not paid until the work has been inspected and found to be up to the standard required by law. State aid is paid on the following basis: for clay gravel, \$250; for gravel, \$500; for stone gravel or gravel stone, \$750; and for stone roads, \$1000 per mile. No township is permitted to receive State aid in any one year for the construction of more than two miles of road.

From the standpoint of local administration, jurisdiction over highways is vested partly in township and partly in county authorities. The so-called county road system may be adopted by a vote of the people. Where this system, which represents a larger measure of administrative centralization, is adopted not more than three county road commissioners are elected in a county. These county road commissioners are vested with large powers over all roads located within their county, including the right to determine what are county highways, to macadamize, drain, or improve any road under their control, fix the amount of tax to be levied for road purposes with certain restrictions and limitations, disapprove the expenditures planned by the board of road supervisors, and be responsible for keeping the roads in good condition. In other words, counties adopting this centralized plan of road supervision would seem to be placed upon a very efficient basis from the standpoint of obtaining the best practical results for the amount of money expended.

The law also authorizes two or more organized townships or any one or more townships and one or more contiguous villages or cities to form a good roads district. Thus, Michigan has adopted a somewhat complicated system of supervision and con-

trol of highways, having had in view, however, the importance of some system of efficient, centralized administration.

A large amount of revenue, both State and local, is provided for the building and maintaining of roads and bridges. In the first place the State has made an annual appropriation of \$250,000, of which amount \$10,000 is set aside for the support of the State Highway Department, the remainder to constitute the State road fund. Counties which have adopted the so-called county road system may levy taxes for highway purposes on the following basis: not more than three mills where the assessed valuation does not exceed \$20,000,000; two mills where the assessed valuation is more than \$20,000,000, but less than \$50,000,000; one mill where the assessed valuation is more than \$50,000,000 but less than \$100,000,000, and finally, where the assessed valuation is more than \$100,000,000 the tax is limited to fifty cents on each \$1000 of assessed valuation.

In the civil townships two distinct taxes are levied for road purposes: one known as the road repair tax, which is limited to five mills except under certain special conditions; and the other known as the highway improvement tax, which varies from one to five mills depending upon the assessed valuation. Provision is also made by law for the issue of both county and township bonds for road purposes, the issue by the county not to exceed three per cent and that of the township not to exceed five per cent of the assessed valuation.

Statute labor has been abolished in Michigan, but under certain conditions the board of supervisors of any county may require convicts to work upon the public roads under the direction of the township highway commission, the prisoners being under the control of the sheriff.

MINNESOTA

The State Highway Commission of Minnesota is composed of three members appointed by the Governor for a term of three years, not more than two members to belong to the same political party. The commissioners serve without compensation, but are authorized to appoint a secretary who must be a civil engineer and practical road builder, and such other assistants as from time to time may be necessary.

The commission must inquire into the best methods of road construction in other states, hold public meetings throughout the State for the purpose of discussing the good roads question, ascertain the location of road materials, report annually to the Governor the number of miles of State road constructed during the year, distribute the State aid fund among the counties, prepare rules and regulations for the construction and improvement of State roads, and in fact exercise general supervision and control

of the public highways of the State. The State Engineer, when it is practicable, is required to make all necessary surveys and prepare plans and specifications for State roads. In cases where plans, specifications, and surveys are not made by the State Engineer, the same must be reported to him. In fact, much of the authority in such cases is vested in the county board, subject to the general supervision of the State Highway Commission.

Minnesota has provided very liberally for the various road and bridge funds. A tax of one-fourth of a mill on each dollar of assessed valuation is set aside as a State aid fund. No county may receive less than one-half per cent or more than three per cent of this fund. In addition to this amount the sum of \$300,000 is annually appropriated to aid in the construction of bridges, not more than one-third of the cost of building any bridge to be paid out of the State aid fund. The last General Assembly made an annual appropriation of \$150,000 for State aid and the expenses of the commission. The county board makes an annual levy of not more than one mill on the taxable valuation for general road and bridge purposes, and the township authorities may also levy a tax of not more than one mill on the dollar of assessed valuation, which tax, however, may be paid in labor. Finally, both townships and counties may issue bonds under certain conditions and limitations.

In 1907 a law was enacted providing for a more centralized system of road administration. A county superintendent of roads and a township inspector were given general supervision and control of highways in counties having less than 200,000 inhabitants. This law, however, which no doubt would have been a great step in advance, was declared unconstitutional by the supreme court, on the ground that the classification adopted was purely arbitrary.

From the standpoint of local administration, therefore, the present system in Minnesota provides simply for ordinary township overseers, except in townships that have voted to pay all road taxes in cash. In such cases a township highway inspector is appointed, who must be a competent road builder, but the cash system now prevails in not more than one-fourth of the townships of the State.

MISSISSIPPI

The State of Mississippi has not provided for a highway commission and in common with the majority of the southern States has not made very great progress in the good roads movement. Each county is divided into five districts for the election of members of the county board of supervisors. The supervisor of each district is given general supervision over the public highways and the board of supervisors is authorized to divide the county

into what is termed road links, and appoint one overseer to have general charge of the road work. The board of county commissioners, however, may employ a competent person to serve as a county road and bridge commissioner thus providing, as the reader will note, for a somewhat more definite system of responsible administration. The board may also work the public roads by contract.

Revenues for the road and bridge fund are provided for, first, by what is called a commutation tax; second, by a property tax of not more than three mills on all taxable property within that part of the county subject to the contract system; third, by an additional tax of not more than one mill on all taxable property levied under certain special conditions; and fourth, by bonds, which may be issued to an amount not to exceed five per cent of the assessed valuation of the county. The county supervisor may order a road to be macadamized, provided that one-third of the cost shall be paid by the owners of the lands benefited. All male persons not exempt by law are required to work on the public highways not more than ten days or pay in lieu thereof the sum of five dollars. Finally, convict labor is also provided for by the statutes of Mississippi.

MISSOURI

Missouri belongs to the small group of States which give the county court jurisdiction over the public highways in counties not under township organization. The court may divide the county into road districts, appointing a road overseer for each district, but is required to appoint a county highway commissioner to inspect and supervise all the roads of the county. In counties under township organization the county engineer has supervision over all the public roads and over the road overseers of the civil townships.

Revenue for the support of the road and bridge funds is derived from the following sources: first, all money accruing to the State from any levy for road purposes constitutes the State road fund, and must be used for the construction of permanent highways; second, the county courts may levy a tax of not more than two mills on the dollar of assessed valuation; third, a special tax of not more than two and one-half mills may be levied in counties not under township organization for road and bridge purposes; fourth, township boards may also levy a tax of not more than two and one-half mills on the assessed valuation; and fifth, bonds may be issued by the county court after being authorized by a two-thirds vote of the people at a special election, provided that the total debt of the county does not exceed five per cent of the assessed valuation of all property in the county. Special road districts, however, may be formed and authorized to

issue bonds. Finally, the county court in all counties not under township organization may levy a poll tax of not less than three dollars nor more than six dollars, which may be worked out or paid in cash.

In the construction of permanent roads Missouri provides a very unique system of tax distribution. The State pays one-half, the citizens benefited pay one-fourth, and the county or other local district pays the remainder. The apportionment of the State fund is based on the assessed valuation, but no county may receive more than three per cent of this fund in any one year.

MONTANA

Montana, in common with practically all of the States west of the Missouri River, has the commissioner system of county government. The county boards have general supervision over the highways, divide their counties into suitable road districts, and appoint supervisors for the same. The county commissioners may let by contract the construction and improvement of highways and bridges when the amount of work required costs more than two hundred dollars.

The revenue for the improvement of highways and the construction and repair of bridges is provided for by a tax of not less than one nor more than three mills on all taxable property, and by a special road tax of two dollars, which may be paid by one day's labor on the roads. Finally, the board of county commissioners is authorized to issue bonds for the construction of bridges and highways.

NEBRASKA

The county boards of commissioners have jurisdiction over the public roads where the township organization does not exist, and are required to divide their respective counties into convenient road districts, one road overseer being elected for each district. In counties under township organization, however, jurisdiction over township roads is vested in the township board. The county board may appoint a county highway commissioner, who must be an experienced road builder, is given general supervision of district road overseers, and is further required to have all main traveled roads dragged regularly, at a cost of not more than one dollar per mile for each dragging.

From the standpoint of the distribution of road funds the laws of Nebraska are very instructive. The county levy, so called, includes a tax of not more than five mills for road purposes, four mills for bridge purposes, a special tax of not more than five mills to pay outstanding road warrants, and on the petition of interested parties a road improvement levy may also be made. One-half of all money collected constitutes the county road fund,

and is divided equally among the commissioner's districts. The other one-half makes up what is called a district road fund, and must be expended in the road district where it was collected.

The civil townships are also authorized to levy a tax of not more than ten mills on the dollar for roads and two mills on the dollar for bridges. Every male inhabitant, unless exempt by law, is required to pay a poll tax of two dollars and fifty cents which, together with all other road taxes, must be paid in cash. Finally, bonds may be issued by any county, township, precinct, city, or village for constructing a State boundary road after the same has been approved by three-fifths of the voters at a special election; and State aid is also given for constructing roads under certain conditions.

NEVADA

Jurisdiction over highways in the State of Nevada is vested in local road inspectors or supervisors, the board of county commissioners, and a State Engineer. The county board is required to district the county and may appoint one road inspector for each district. In any county polling three thousand votes or more at the last general election, however, the board of county commissioners shall divide the county into road districts, and appoint one road supervisor in each district to serve during the pleasure of the board.

Revenue for the support of roads and bridges is secured through taxes levied by the board of county commissioners, a tax of not more than two and one-half mills being levied for highway purposes; but upon the petition of a majority of the property holders of any district an additional levy of three mills may be made, which tax may either be paid in cash or worked out on the highways. Finally, a poll tax of three dollars is also levied for the use of the State and county, and a system of convict labor is provided.

NEW HAMPSHIRE

The Governor and Council constitute the State Highway Commission of New Hampshire. The commission is authorized to appoint a State Engineer, fix his salary, and must make a biennial report to the legislature embodying a statement of expenditures. The Governor and Council, acting as a highway commission, are also required to furnish the services of any engineer in the employ of the State for consultation and advice, must provide plans and specifications for any work paid for partly out of State funds, and make rules and regulations governing the question of State aid. The law requiring all State aid work to be done according to specifications furnished by the highway commission was enacted in 1907.

Each town desiring State aid must make application for the same through the board of county commissioners, and set apart a certain amount for the improvement of its main highways under the advice and direction of the State Engineer. The amount that must be set apart varies from twenty-five cents to one dollar for every \$1000 of valuation, depending upon the total assessed valuation of the town; and the amount in turn appropriated by the State varies from twenty cents to three dollars for each dollar set apart by the locality, also depending upon the assessed valuation of the town. The amount thus apportioned by the State and the localities for the building of permanent roads is known as the joint fund. No part of this fund may be expended within the "compact portion" of a city or village of more than 2500 population, and it is further stipulated that all highways improved by the joint fund must be kept in good repair at local expense in a manner satisfactory to the State Highway Commission.

From the standpoint of local supervision, jurisdiction over highways is vested in the commissioners of the counties and in the selectmen of the towns. In common with the other New England States, the township is a very important unit of local government in New Hampshire. Revenue is obtained from both State and local taxes and the issue of bonds. The State annually appropriates \$125,000 as a permanent highway fund, and bonds have also been issued to the amount of \$1,000,000. Furthermore, each town at its annual meeting raises and appropriates a sum not less than one-fourth of one per cent of the valuation of all polls and rateable estate on which taxes are paid. Each town, however, may raise as much more as is necessary, but not to exceed fifty dollars per mile, for the repair of roads and bridges. Finally, the law provides that sixty-five per cent of the fees and fines collected from the motor vehicle law shall be used for the maintenance of trunk line roads, and thirty-five per cent for the maintenance of roads not on trunk lines.

NEW JERSEY

A commissioner of public roads is appointed by the Governor with the consent of the Senate for a term of three years, and receives an annual salary of \$5000. An additional allowance for clerk hire and the employment of supervisors and engineers is made. The commissioner of highways collects data regarding the improvement and construction of roads, makes an annual report to the legislature, awards contracts for the improvement of roads constructed partly out of State aid, must approve all plans and specifications, and may reject either the contract itself or the plans and specifications if he believes that the best interests of the county require it. In other words, plans and specifications for

so-called county roads are prepared by the board of free holders of the county, but must be approved by the State Highway Commissioner, a fact which will be very instructive to the advocates of better road administration in Iowa.

The method of distributing road taxes in New Jersey is also worthy of careful study. One-third of the cost of building county roads is paid by the State, fifty-six and two-thirds per cent by the county, and ten per cent by the township. New Jersey was the first State in the Union to begin the policy of State aid, in 1891, and since that time the sum of \$3,301,595.10 has been paid out of the State treasury for this purpose. The effect of the State aid policy and the more centralized plan of road administration has been very marked. Out of a total of 14,842 miles of public highway, 3377 miles have been improved. About 1562 miles were improved under the State aid law, down to December 31, 1910.

From the standpoint of local supervision, the county board of chosen free holders has jurisdiction over county roads and the township committee of each township has jurisdiction over the township roads. The boards of chosen freeholders of the various counties are authorized to construct and repair certain county roads and pay for the same by levying a special tax, securing temporary loans, or by issuing bonds to be met by a special tax levy for that purpose. Such bonds, however, must not run more than thirty years, and bear not to exceed five per cent interest. All road taxes are required to be paid in cash.

At the present time the General Assembly annually appropriates about \$400,000 for what is known as new construction work. Up to October 31, 1911, the amount received from the motor vehicle fund and distributed for repair was about \$200,000. Indeed, the annual expenditure for the construction and repair of roads by both State and counties now exceeds \$200,000, exclusive of the large amount expended by townships, boroughs, and cities.

NEW MEXICO

The State Highway Commission of New Mexico is composed of three members: the Governor, the Commissioner of Public Lands, and the State Engineer, all of whom serve without compensation. The commission has general supervision of all highways and bridges in the State constructed or maintained either in whole or in part out of the State aid fund. The State Engineer also has supervision of all county bridges built by contract the cost of which is more than \$1000.

In the different counties of the State, highways are placed under the jurisdiction of the county commissioners, who are required to divide their counties into road districts and appoint a

road overseer for each district. In 1907 the road law was so amended as to prevent any county from having more than three road districts.

The State road fund is obtained by levying an annual tax of not more than one mill on each dollar of taxable property in the State. The boards of county commissioners are authorized to levy a tax for road purposes of not more than three mills on the dollar. All able bodied men, not otherwise exempt, are required to pay a road poll tax of three dollars, or in lieu thereof work three days on the public highways. Finally, convict labor is provided for under certain restrictions and limitations.

NEW YORK

The Department of Highways is composed of three commissioners appointed by the Governor, with the consent of the Senate, for a term of six years, at a salary ranging from five to six thousand dollars. At least one commissioner must belong to the minority party, and one is required to be a civil engineer and an experienced road builder.

The State Highway Commission of New York is clothed with very large power and authority, which is primarily responsible for the great progress of the good roads movement in that State during the last few years. The commission has supervision over all highways and bridges improved either in whole or in part out of State funds; prescribes rules relating to the duties of division engineers, district, county or town superintendents of highways; aids local road officers in establishing grades and drainage systems; prepares plans and specifications for both roads and bridges when requested to do so by local authorities; investigates methods of road construction; and holds annual meetings in each county or district throughout the State in order to furnish information regarding the best methods of highway construction and the proper interpretation of the highway law. Finally, it is made the duty of the highway commission to divide the State into not more than six divisions, assigning to each a division engineer who must also be an experienced road builder.

New York has established a very liberal State aid policy. Recently \$50,000,000 in bonds was issued for that purpose. Application for State aid must be made through the county board of supervisors. If the consent of the highway commission is obtained, plans and specifications are prepared by the division engineer and submitted to the proper district or county superintendent of roads for examination. The board of supervisors may make changes in the plans with the consent of the highway commission.

The amount of State aid granted to the several townships varies from fifty to one hundred per cent of the amount of taxes

raised in said township, depending upon the assessed valuation of the same. The cost of building State roads is borne entirely by the State; while fifteen per cent of the cost of building county roads is borne by the town, thirty-five per cent by the county, and fifty per cent by the State. In other words, the State pays all the cost of constructing State roads, fifty per cent of the cost of constructing county roads, and distributes aid among the civil townships on the liberal basis outlined above.

The boards of supervisors of the respective counties have general jurisdiction over the roads of their counties, while the commissioners of highways of the civil towns have the care and supervision of all highways and bridges located therein. Towns having adopted the so-called money system raise a tax for road purposes equivalent to at least one-half the value of the commutation rates of the highway labor which would be assessed under the labor system. In addition every able bodied male, not exempt by law, is required to pay an annual road poll tax of one dollar. In towns retaining the labor system the number of days assessed annually must not be less than three times the number of taxable inhabitants in the town. It is therefore apparent from a financial standpoint that both the township and the county are important units of road administration, having the power to levy taxes and borrow money for road purposes.

In conclusion it should be noted, first, that all property road taxes must be paid in cash; second, that convict labor may be employed to a very limited amount and that the county superintendent of roads may be removed from office by the highway commission, which from the standpoint of responsible administration is an important power to be vested in the State. The fiscal authority of the town board is apparent from the following list of taxes which it is authorized to levy: first, the amount levied and collected for the repair and improvement of highways must equal thirty dollars per mile outside the limits of incorporated villages; second, not more than fifteen hundred dollars may be levied in any one year for the repair and construction of a bridge unless authorized by the town meeting; third, the purchase of more than five hundred dollars' worth of road machinery must also be authorized in the same manner; and fourth, the town meeting must give its consent to the expenditure of more than fifteen hundred dollars for the repair or construction of any highway or bridge which has been damaged or destroyed. Other important powers both of the township and county might be mentioned.

NORTH CAROLINA

The North Carolina Geological Board, through the State Geologist, may make investigations and experiments concerning the best methods of road construction and the best kind of road

material, and disseminate this information by means of bulletins, reports, or lectures, thus acting to a certain extent as a State highway commission. The sum of \$5000 is annually appropriated for carrying out the provisions of this particular act. Indeed, the system of State supervision in North Carolina is quite similar to that which now prevails in Iowa.

The State of North Carolina has a dual system of township and county supervision and control of highways, which varies more or less in the different counties throughout the State. Jurisdiction over highways is vested partly in the justices of the peace in each township, who have control of the public roads, and are known as the township board of supervisors of public roads; and partly in the board of county commissioners. The township board of supervisors thus constituted is required to divide the township into road districts and appoint road overseers for the same. It should be noted, however, that the jurisdiction of township authorities within the respective townships is subject to the direction of the board of county commissioners.

From the standpoint of revenue for the support of roads and bridges the county is the important unit of local government, the county commissioners having authority to levy a tax of not more than double the amount of the State tax. All male persons, not exempt by law, are required to work on the public highways not more than six days each year excepting in counties west of the Blue Ridge mountains where ten days' work may be required. Finally, the county commissioners may employ convict labor according to the rules and regulations prescribed by law.

NORTH DAKOTA

In 1909 a Good Roads Experiment Station was established at Bismarck for the purpose of investigating the most practical, economical method for the construction and maintenance of the public roads of the State. The State Engineer is required to furnish plans and specifications, and also to supervise the construction and maintenance of roads constructed under the provisions of this act. It should also be noted that in 1911 a concurrent resolution was adopted providing for an amendment to the Constitution which, if ratified, will enable the State to grant aid for the construction of highways.

The supervision and control of highways in North Dakota depends upon the character of local government prevailing in the different counties. In counties not under township organization the board of county commissioners is required to divide the county into road districts and appoint a road supervisor for each district. In counties under township organization the township supervisors are required to divide the townships into suitable

road districts, an overseer being elected for each district, subject, however, to the general supervision and control of the board of county commissioners. Finally, it should be noted that a recent statute gave the board of county commissioners authority to appoint a county superintendent of highways and deputy road superintendents to take the place of the local road overseers, a law quite similar to that enacted by the General Assembly of Iowa in 1911.

The county levy is limited to five mills for the support of roads and two mills for the construction and repair of bridges; while the township road tax may not exceed eight mills and the bridge tax not more than two mills on each dollar of assessed valuation. Every male inhabitant not exempt by law is required to pay a road poll tax of one dollar and fifty cents which may be paid by one day's labor on the roads; and in 1911 a license fee of three dollars was levied on owners of motor vehicles and the revenue thus derived placed in the county road fund.

OHIO

The State Highway Commissioner is appointed by the Governor for a term of four years at an annual salary of \$2500. The highway commission is required to coöperate in the building of roads in those counties which comply with the provisions of the act. The highway commissioner approves all applications, prepares plans and specifications, submits estimates of the cost of work, advertises for bids, and apportions the cost among the State, county, township, and abutting property.

Ohio gives a substantial amount of State aid for highway purposes. Application for the same may be made by the boards of county commissioners or by abutting property owners. The State aid fund consists of an annual appropriation of \$158,000, which must be equitably distributed among the counties, the State paying fifty per cent of the cost, the county twenty-five per cent, the township fifteen per cent, and the owners of abutting property ten per cent. The township trustees are authorized to apportion the amount to be paid by the owners of abutting property on the basis of benefits received. All State aid roads must be kept in good condition by the county commissioners, but in case of failure to do so the highway commissioners may do the work and take the cost from any fund apportioned to said county.

Local jurisdiction over roads is vested in the board of county commissioners for county roads and in the township trustees for township roads, the county and township supervisors being independent of each other. Good roads districts, however, may be formed, the board of county commissioners being given authority in such cases to appoint road commissioners, who in turn may

appoint an engineer to do the necessary work. A township, with the approval of the people at a special election, may also be organized into a good road district with power to appoint road commissioners to superintend the work.

The revenue system of Ohio, judged from the standpoint of road administration, is very complicated. Money is derived for roads and bridges from the following sources: first, a tax varying from one-half to five and one-half mills, depending upon the assessed valuation, levied by the board of county commissioners; second, an additional tax of not more than five-tenths of a mill for the creation of a State and county improvement fund, also levied by the board of county commissioners; third, county bonds which may run not more than three years; fourth, township bonds to pay for road improvements; fifth, so-called district bonds issued in a good road district, with the approval of the voters to an amount not exceeding \$100,000; and sixth, a township tax of not more than six mills on each dollar of assessed valuation in the township. In addition to this, all male persons not exempt by law are required to perform two days' labor on the highways or commute for the same by the payment of three dollars. All property taxes must be paid in cash and convicts may be required to crush stone and manufacture road materials.

OKLAHOMA

The Constitution of Oklahoma directs the legislature to establish a Department of Public Highways and also grants authority to create improvement districts for the building and maintaining of public roads. Such a department has been created, the Governor having authority to appoint, with the approval of the Senate, a State Highway Commissioner who holds office for a term of four years and receives an annual salary of twenty-five hundred dollars. The State Highway Commissioner is required to prepare standard specifications for the construction and maintenance of roads, also a general highway plan for the State, and must collect information as to mileage, character, and condition of highways throughout the State. All local road officials are required to furnish the commissioner any information which he may require concerning the cost of building and maintaining highways in their particular jurisdiction. Finally, a motor vehicle tax of one dollar annually is levied for the support of the State Highway Department.

The county commissioners have jurisdiction over what are termed county roads and the township board has general supervision over township roads. Township boards acting as township highway commissioners divide their township into a convenient number of road districts, appointing supervisors to take charge

of the work therein. The county commissioner may appoint a county engineer who shall be the county surveyor if the latter possesses a practical knowledge of civil engineering.

In 1905 an act was passed whereby on petition of not less than one hundred free-holders the board of county commissioners of any county is required to submit to a vote of the people the question of adopting a system of county supervisors of highways. In counties adopting this system the office of county surveyor is abolished and that of county engineer created in lieu thereof. Road improvement districts of not less than eighteen square miles may be created in any county upon a written petition signed by fifteen per cent of the qualified electors of a proposed district, seventy-five per cent of the cost of road improvement to be paid by the district and twenty-five per cent by the county.

Revenue for roads and bridges is obtained from township and county levies, also by the issue of county and township bonds. The township board may levy a township road and bridge tax of not more than five mills on the dollar. County bonds for highway purposes may be issued not in excess of two per cent of the assessed valuation of the county if the same has been approved by three-fifths vote of the people. Under the same conditions the township may issue bonds not to exceed three per cent of the assessed valuation. Every male citizen not exempt by law is required to work four days on the public roads or commute for the same by payment of five dollars in money. The law also authorized the working of convicts on the highways.

OREGON

The public roads of Oregon are under the general supervision of the county courts, as is also the case in Kentucky and Missouri. The court is required to divide the county into road districts, appointing a road supervisor for each district, and may appoint a county road master or masters who must devote their whole time to the work, which is done either by contract or by hired labor.

Revenue is obtained for road and bridge purposes by a levy of not more than ten mills in any road district if the same has been approved at a meeting held for that purpose of at least ten per cent of the taxpayers of the district making the levy. Fifty per cent of the money levied by the county is apportioned among the several road districts and the tax must be paid in cash. A poll tax of three dollars on every male person not exempt by law must also be paid in money. Finally, a system of convict labor is provided and in 1911 the Legislative Assembly passed a law fixing a graduated license fee on motor vehicles, the proceeds of the same to be paid into the State treasury and known as "The Motor Vehicle Fund."

PENNSYLVANIA

The State Highway Commissioner is appointed by the Governor, with the consent of the Senate, for a term of four years. He must be an experienced road builder, receives an annual salary of \$8000, and is required to furnish a bond in the sum of \$50,000, to be approved by the Governor, for the faithful performance of his duties. The Governor also is required to appoint two deputy State highway commissioners, each at a salary of \$6000 per annum, an expert accountant at a salary of \$3000 per annum, and a chief engineer at a salary of \$7000 per annum. The State Highway Commissioner in turn shall appoint one assistant to the chief engineer at a salary of \$3600 per annum, fifty superintendents of highways, and fifteen additional civil engineers at liberal salaries.

The State Highway Commissioner prepares plans and specifications, makes necessary surveys and estimates of the cost of work, proportions the State aid fund, determines the standard of construction in the various localities, and may reject any and all bids if the prices are materially higher than his own estimates. He is also required to compile highway statistics, investigate road building, and may be consulted by the various local highway authorities.

On petition of the supervisor of any township and application by the board of county commissioners State aid may be obtained for the building of permanent highways. In such cases, however, the township is required to levy a cash road tax and may issue bonds to pay its share of the expense. The sum of \$6,356,332.47 was appropriated to carry out the provisions of this act. The expense of improving highways is paid on the following basis: three-fourths by the State, one-eighth by the county, and one-eighth by the township. It should also be noted that ten per cent of the amount available for State aid is set apart for the maintenance of highways and distributed among the localities by the highway commissioner on a mileage basis.

From the standpoint of local supervision and control Pennsylvania has a somewhat complicated system. Largely as the result of geographical and historical development, local government is an instructive mixture of the township and county principles. The roads of the county are under the jurisdiction of the county commissioner. In order to improve roads, however, the consent of the grand jury and the court of quarter sessions is required. In townships having a population of less than three hundred, three road supervisors are elected who serve for a term of three years, who divide their respective townships into road districts containing not less than five miles of road and appoint a road master for each district.

Revenue for road and bridge purposes is obtained from the following sources: first, a county levy of not more than two mills on the dollar for improving important county roads; second, a township levy of not more than ten mills on the dollar for constructing and repairing bridges; third, an additional levy of ten mills may be levied by the court of quarter sessions upon petition of the township board of supervisors; fourth, by the issue of road bonds under certain conditions and limitations; and fifth, by the State tax levy already noted. All road taxes must be paid in cash, provided, however, that townships at their annual meeting may by a majority vote adopt the labor system. Convict labor may also be employed when deemed expedient.

RHODE ISLAND

A State Board of Public Roads consisting of five qualified electors, one from each county in the State, is appointed by the Governor for a term of four years, each receiving an annual salary of \$1000, but not being required to give their full time to the work. This board, acting as a highway commission, makes an annual report to the General Assembly on the subject of good roads. No work, aside from preliminary surveys, is done until the report of the commission has been approved by the General Assembly and an appropriation of money made for the purpose of the proposed road improvement. State roads are constructed entirely at State expense, no aid being given by the counties or minor civil divisions.

In 1906 a bond issue of six hundred dollars was authorized to provide for a highway construction fund, and a second bond issue of the same amount was made in 1909 to complete the system of State roads. The proceeds of a graduated license fee on motor vehicles are used for the repair of State highways under the supervision of the State Board of Public Roads.

From the standpoint of local administration the township is the important unit of local government. The town council is required to divide the town into not more than four districts, annually electing one surveyor of highways for each district. Each town at the regular town meeting should annually raise and appropriate such sum as may be deemed necessary for the construction and maintenance of highways and bridges. All road taxes must be paid in cash.

SOUTH CAROLINA

In eight counties of South Carolina the township system of road supervision prevails, the township board, with the approval of the county commissioners or the supervisors of the county being required to divide the township into a convenient number

of road districts and appoint an overseer for each district. In all the remaining counties jurisdiction over the public roads is vested in the board of county commissioners and the county supervisor. In counties under this system the township constitutes the highway district and the board of county commissioners acting with the county supervisor are authorized to appoint an overseer for each township. In 1909, however, certain counties were authorized to adopt the contract system and to employ superintendents and engineers and lay out a plan of road construction.

Revenue for road and bridge purposes is raised by the county or township, depending upon the system of local government as above outlined, the regular levy being limited to one mill on the dollar. The township board may make an additional levy of not more than two mills when the same has been approved by a vote of the people. All male persons not exempt by law are required to perform not less than two nor more than eight days labor on the public highways or commute for the same by the payment of not less than one dollar nor more than three dollars per day. Some counties require all road taxes to be paid in cash. Finally, a system of convict labor is provided by the laws of South Carolina.

SOUTH DAKOTA

General jurisdiction over highways is vested in the board of county commissioners, who divide the county into a suitable number of road districts and appoint a road supervisor for each district. In counties under township organization, however, the township authorities have supervision over all roads located therein and are required to divide each township into road districts and appoint an overseer for each district. In other words, two distinct systems of local supervision and control of highways prevail in South Dakota much the same as in Illinois.

Revenue is obtained by county levy of not more than two mills, a township levy of not more than five mills, and a poll tax of one dollar and fifty cents which may be paid in money or by one day's labor, unless the township has adopted the cash system, in which case road work is let by contract.

TENNESSEE

The State Highway Commission of Tennessee consists of three members appointed by the Governor, one from each grand division of the State, who serve for a term of three years without compensation. It does not appear, however, that this commission has been granted any substantial power or authority.

Jurisdiction over public highways and bridges is vested in the

county court, which is required to divide the county into one or more road districts and elect a road commissioner for each district. The county court may also elect a board of three turnpike commissioners, the chairman of the court to be ex-officio chairman of the board, the other two members being freeholders of the county, but not members of the court.

Revenue for roads and bridges is obtained from the following sources: First, a road poll tax of not less than four nor more than eight days, which may be commuted by paying seventy-five cents per day in cash; second, a levy of two mills by the county court on all property outside of incorporated towns and cities, provided any person may work out two-thirds of this tax where his property is situated; third, an ad valorem tax of not less than one or more than three mills on all property in the county outside of incorporated towns and cities; fourth, county bond issues authorized by special acts of the legislature and approved by the people; and fifth, a bridge tax of two mills on the dollar levied by the county court. The road tax of incorporated towns and cities is levied by the proper municipal authorities. Finally, convicts may be worked on public highways subject to the direction of the county court.

TEXAS

The county commissioners have jurisdiction over the public highways, each commissioner being a road supervisor within his own district. They have power to divide the county into precincts and appoint an overseer to supervise the work in each precinct. The commissioners' court, however, may appoint one county road superintendent, who shall have supervision over all the public roads in his county and over all county convicts working on the roads.

The commissioners of each county may levy a road tax of not more than one and one-half mills on the taxable valuation and an additional road and bridge tax of not more than one and one-half mills if agreed to by a majority of the taxpayers. In 1907 an act was passed authorizing any county or political subdivision thereof to issue bonds for constructing and maintaining public roads with the approval of the people by a two-thirds vote. The bonds so issued must not exceed twenty-five per cent of the assessed value of real property, may extend forty years and bear interest not to exceed five and one-half per cent, a tax of not more than one and one-half mills being levied to pay the interest and principal of said bonds. All male persons not exempt by law are required to work on the roads not more than five days in each year or commute for the same by the payment of one dollar for each day.

UTAH

The State Highway Commission serves without compensation, being composed of the Governor, the State Engineer, the State Treasurer, one member of the faculty of the Utah Agricultural College selected by its Board of Trustees, and one member of the faculty of the University of Utah selected by its Board of Regents. The commission thus constituted is clothed with authority to select the roads comprising the system of State highways, prepare a map of roads thus designated, furnish plans and specifications on application of county commissioners, prepare a road manual for the assistance of local road officials, and in fact exercise a substantial supervision and control over highways of the State.

In 1911 the legislature of Utah made an annual appropriation of \$60,000 for a State road fund the same to be available for the construction of State roads in each county of the State in equal proportions.

Jurisdiction over the highways is vested in the boards of county commissioners, who divide their respective counties into road districts, appointing biennially a road supervisor for each district. The county commissioners may also divide their counties into special districts for the purpose of constructing permanent roads.

No special limit is placed upon the amount of taxes to be levied for road purposes, the county commissioners being authorized to appropriate such sums as they deem necessary. Bonds may be issued by the commissioners when approved by a majority vote of the people and a special road tax levied for the construction of permanent highways. When a special tax, however, is levied for this purpose the taxable property is divided into three equal sections, the first section adjacent to the road bearing fifty per cent of the cost, the middle section thirty per cent and the section most remote twenty per cent. Finally a road poll tax of two dollars is levied and must be paid in cash.

VERMONT

The State Highway Commissioner is appointed by the Governor with the consent of the Senate, and is clothed with authority to direct the expenditure of all moneys appropriated by the State or appropriated to towns or incorporated villages for highway purposes. The commissioner shall also make rules and regulations governing the expenditure of highway funds, and with the advice and consent of the Governor, shall annually appoint not to exceed one supervisor for each county to assist him in the performance of his duties.

While the county, therefore, is an important unit of government from the standpoint of State administration, it has no local

supervision or control of highways as such. In Vermont the town is the unit of local administration, the selectmen being granted a substantial amount of power and authority. In addition to other functions, the town is the unit for the maintenance of highways constructed by the State, a fact which will be of special interest to the advocates of the good road movement in Iowa.

Revenue for road and bridge purposes is obtained by a State highway tax of five mills, a town tax of five per cent on the grand list, and a license tax on motor vehicles. An appropriation for \$150,000 was made in 1910 for permanent highway improvements. The automobile tax now amounts to \$60,000 a year and is used as a maintenance fund.

VIRGINIA

A State Highway Commissioner, who must be a civil engineer, is appointed by the Governor with the consent of the General Assembly in joint session. His term of office is six years and his salary \$3000 per annum. The highway commissioner, and the professors of civil engineering in the University of Virginia, the Virginia Military Institute, and the Virginia Agriculture and Mechanical College and Polytechnic Institute constitute the State Highway Commission. The commission prepares plans, specifications, and estimates of the cost of permanent highway improvements, surveys proposed State roads, has supervision of the construction and repair of main traveled roads, is required to supply technical information to local authorities, and approves or disapproves contracts after the same have been let by local authorities.

From the standpoint of local administration Virginia in common with a great many other States has a somewhat complicated system. Some counties operate under special road laws. In general, however, the supervision of highways is vested in county boards of supervisors, county superintendents of roads, road sub-district boards and road sub-district surveyors. The board of county supervisors appoints biennially a county superintendent of roads who must be experienced in road building or preferably a civil engineer. This officer superintends the work of opening, repairing, and maintaining county roads and bridges. If deemed necessary the superintendent of roads, with the approval of the county board of supervisors, may divide the county into road districts each of which usually consists of at least one magisterial district.

State aid is granted on application of the proper county authorities, provided one-half of the expense of construction is paid by the county. The sum of \$250,000 is annually appropriated for

this purpose. The road authorities of each county are also clothed with authority to determine what part of the fifty per cent borne by the county shall be paid by the small road divisions or by private contributions.

In addition to the State appropriation already noted the board of supervisors of each county may levy a tax of not more than four mills on a dollar of assessed valuation, also a tax of not more than four mills on all taxable property in the several magisterial districts and finally, counties where no special road law is in force may be divided into road sub-districts by the board of supervisors, and a tax of not more than five mills levied with the approval of a majority vote of the qualified electors. Aside from the taxes thus levied bond issues are authorized to an amount which the imposition of an annual tax of not more than two mills on a dollar providing the same has been approved by a vote of three-fifths of the qualified voters. Finally, convict labor is provided for by the laws of Virginia.

WASHINGTON

The State Highway Commissioner of Washington is appointed by the Governor for a term of four years and receives an annual salary of \$5000. The State Highway Board is composed of the Governor, Auditor, the State Treasurer, the State Highway Commissioner, and a member of the State Railroad Commission to be selected by the Governor. The ex-officio members of the Board serve without compensation. The State Highway Commissioner is required to compile statistics relating to public highways throughout the State, may be consulted by county officers, shall assist local road officials when requested to do so, and is required to submit a report ninety days before each session of the legislature.

The unit of local administration is the county, the board of county commissioners having general charge of road work and the levying of taxes for road and bridge purposes. The commissioners are required to divide their respective counties into not more than twenty-four districts and appoint one road supervisor for each district. The county surveyor is elected to office, must be a civil engineer, and is given substantial authority in road and bridge matters.

In 1911, however, a law was passed permitting counties to adopt township organization. In counties which take advantage of this option, the township supervisors may divide their townships into road districts and appoint a road overseer for each district, thus representing a somewhat reactionary tendency toward administrative decentralization.

Revenue for road and bridge purposes is obtained from the

following sources: county bonds issued in an amount not exceeding five per cent of the taxable valuation; a tax of not to exceed four mills on all the taxable property in the county levied by the board of county commissioners; a tax of not more than two mills on the dollar of all taxable property in each road district also levied by the county commissioners for the district road and bridge fund; a license of two dollars on motor vehicles; and finally, a state tax of one mill on all taxable property in the State. Washington also provides for a somewhat comprehensive system of convict labor on the public highways.

WEST VIRGINIA

The State Highway Commissioner is appointed by the Governor for a term of four years, and receives an annual salary of \$3000. Said commissioner distributes bulletins concerning the construction and maintenance of roads, makes biennial reports to the Governor and legislature recommending advisable legislation, exercises general supervision over all roads constructed, improved or maintained either in whole or in part by State money, prepares rules and regulations for county engineers, holds public meetings for the discussion of all questions relating to the general subject of roads, examines and approves plans and specifications for State aid roads, causes tests of road materials to be made, and finally examines all accounts and records made by various road officials.

From the standpoint of local administration, jurisdiction over roads is vested in the county court, which appoints a competent man as a road supervisor for each magisterial district, who under the direction of the court divides his district into convenient road precincts. In lieu of this system, however, the court may appoint a county road engineer, who is given supervision of all road work in the county.

State aid is granted if plans and specifications prepared by the county engineer have been approved by the county court and by the State Highway Commission. The county court advertises for bids, but it should be noted that the contract must be approved by the State Highway Commissioner. The State pays one-third of the cost of constructing county roads out of a fund created by levying a tax of not more than one mill on a dollar. In addition to the State aid fund the county court is authorized to levy such taxes as may be necessary for the construction and maintenance of roads. What is called a district tax of one dollar may be levied on every male inhabitant not exempt by law. Finally, counties, cities, towns, and villages are authorized to issue bonds for the purpose of improving roads. All road taxes are paid in the same manner as other county and State taxes and

the county road engineer is authorized to employ convict labor on the highways.

WISCONSIN

The State Highway Commission consists of the Dean of the College of Engineering of the State University, the State Geologist, and three other members appointed by the Governor, all of whom serve without compensation. The commission has authority to employ, remove and fix the salaries of engineers and experts as well as the regular clerical force of the office. The law of 1911 made an annual appropriation of \$350,000 for road and bridge construction and \$40,000 additional for engineering and other expenses of the commission.

The county board of each county is required to appoint a competent man as county highway commissioner. The new law provides for a continuous system of county roads or prospective State aid highways. These roads may be constructed by the town, county, and State acting jointly, each paying one-third of the cost. Improvements are made by the county highway commissioner under the general supervision of the State Highway Commission. Counties may pay two-thirds or four-fifths of the cost, the State paying the remaining one-third or one-fifth in cases where towns have not petitioned for improvement. Improved stone or gravel roads and bridges are maintained by the counties, but ordinary dirt roads are maintained by the towns. Finally, the cost of bridges over six feet in span is paid two-fifths by the town, two-fifths by the county, and one-fifth by the State.

It would seem, therefore, that the distribution of authority in road and bridge matters has been worked out on a somewhat complex but scientific basis. At the head of the system is the State Highway Commission which exercises supervision and control through county highway commissioners appointed by the various county boards of supervisors. Jurisdiction over township roads is vested in the township board composed of three members elected annually who divide their township into small road districts, appointing road superintendents or road masters for each district.

Revenue is obtained by a poll tax of one dollar and fifty cents, which may be worked out; a county levy of not more than two mills for the purpose of building county roads; a township levy of not less than one nor more than seven mills; an additional levy of not more than fifteen mills if the same has been authorized by a vote of the town meeting; a special tax of not less than one-half nor more than one mill may be voted at the annual town meeting for the construction of permanent highways; an issue of township or county bonds; and finally, the State appropriation already mentioned.

WYOMING

The county commissioners have jurisdiction over the public highways and may divide the county into a convenient number of road districts, one road supervisor being elected for each district. If a county is not divided into road districts, a county road supervisor is elected by the people.

Revenue for the support of roads and bridges is derived from an annual county levy of not more than twelve mills on the dollar. A road building tax of two dollars may also be levied by the county commissioners, which may be paid in cash or worked out on the roads. Finally in 1911 a law was passed establishing a regular system of State highways, providing for the construction, repair, and maintenance of the same by convict labor.

It is evident from an examination of the different systems of road administration in the various States, as above outlined, that the good roads movement has long since passed the academic stage and become a practical reality. In an article entitled *Highway Improvements*, Mr. Logan Wailer Page, director of the United States Office of Public Roads, declares that the year 1911 witnessed the greatest progress which had ever been made in a single year in the matter of highway improvement. It is stated that the expenditures for construction projects in 1911 were much greater than those of any preceding year.

In order to furnish a definite idea of the present good roads movement and what it means to the country, nothing better can be done by way of conclusion, than to present a brief outline of the following important subjects: first, educational propaganda carried on by chambers of congress, commercial clubs, local, State, and national good road associations, and various other similar organizations; second, revenue for the support of roads and bridges; third, State aid and what it has accomplished; fourth, the economic value of good roads; and fifth, the importance of a more efficient centralized administration in all the units of government from the township up to the State.

According to Mr. Page, during the year 1911 numerous county, State, and national road associations were organized. Many other associations, which up to that time had taken no interest in road matters, appointed committees to investigate the subject. Some organizations are working for the improvement of certain special highways like the ocean to ocean highway, the Pacific highway, or the river to river highway in our own State. In other words, some organizations are nation wide, others State wide, still others

are interested in the roads of a county or similar area, and finally there are others devoted to certain special projects.

The reader will recall the interest taken by the railroads, and the running of special trains in Iowa, to promote the use of the road drag. Much was accomplished in that way, and certain definite legislation was the result. This sort of an educational campaign, however, is not confined to the limits of Iowa, but has been carried on in other States. During the year 1911 the Office of Public Roads of the United States Department of Agriculture, in coöperation with different railroad companies, encouraged the good roads movement by operating special trains for that purpose. The Pennsylvania Railroad, for example, ran a special train over its lines between January 25th and March 28th. The State Highway Department of Pennsylvania and the State College of Pennsylvania also coöperated in the movement. Illustrated lectures were given, models of standard types of road construction showing the most improved methods of building earth, sand-clay, gravel, brick, and bituminous macadam roads, were exhibited, and in fact, a school of instruction along scientific lines was conducted from place to place. The Pennsylvania Railroad supplied the cars, the State Highway Department furnished the views and lecturers, the State College had general charge of the work, including publicity, and the United States Office of Public Roads supplied the different models and bromide prints to lecturers. Some excellent work was carried on in other sections of the country.

It would require a monograph to discuss adequately the history of good road associations and the excellent educational work which they have accomplished. One of the standpoints from which both the scientific investigator and the practical legislator should judge any important problem is that of publicity. It is a well known fact that before any substantial reform can be realized, public sentiment along that line must first be created. The history of road legislation in Iowa has proved over and over again the necessity of conducting a vigorous campaign of education among the people before any important constructive measure can hope to receive a hearing, much less be adopted. The running of special road trains, the holding of good roads conventions, local, State, and national, and the publicity work accomplished by the different highway commissions are all very essential from the important standpoint of creating an educated public sentiment.

In the second place, according to the above outline, it is necessary to consider the road question or any similar question from the standpoint of finance. It requires money to construct permanent roads and build reinforced concrete bridges. In the past when the labor system was practically the universal rule, the

amount of actual money required for the construction, maintenance, and repair of roads and bridges was reduced to a minimum. With the gradual repeal of laws permitting road taxes to be paid in labor on the one hand and the necessity of constructing roads and bridges out of more costly material on the other, the need of a greater revenue obtained by taxes or the issue of bonds has become obvious. It may be safely said that we shall never again see the time when the revenue for road and bridge purposes in the various States of the Union is less than at the present moment. The fact is that the amount of money needed along this line has increased by leaps and bounds and will continue to increase and be an important factor in making imperative the gradual establishment of more scientific revenue systems in the various States of the Union.

The reader can form some idea of the magnitude of this expenditure and the increase of the same by a comparison of Tables I and II.

It will be noted that in 1904 there were 2,151,570 miles of wagon road in the United States, or in other words, approximately ten miles of wagon road for every mile of railroad. Of this amount 108,233 miles were surfaced with gravel, 38,622 with stone, and 6,807 with other materials, making a total mileage of improved roads of 153,662. It appears that the cost of construction, repair, and maintenance of this vast mileage of highways was \$79,771,417.87, of which sum \$53,815,387.98 represented property and poll taxes paid in cash by the counties and minor civil divisions, \$19,818,236.30 represented labor taxes, \$3,530,470.93 was derived from bonds issued by the counties and minor civil divisions, and \$2,607,322.62 was expended by the States on State aid roads.

An examination of Table II, giving the road expenditures for 1911, reveals a very different story. The State aid fund had increased from only \$2,607,322.66 in 1904 to the large sum of \$21,037,769.00 in 1911; local bond issues had also increased from \$3,530,470.93 to \$18,503,356; and finally, the total revenue from all sources expended for road purposes had practically doubled in six years, increasing from \$79,771,417.87 to \$141,291,125. While it should be noted that these figures are not absolutely accurate, they nevertheless point out in terms of cold dollars and cents the significance of the present good roads movement.

In concluding this brief study of the road and bridge question from the standpoint of public revenue, the labor tax, so-called, should at least be mentioned. This form of taxation for road purposes is universally condemned by men who have given any serious thought to the subject. Nearly a quarter of a century ago Professor J. W. Jenks in his able monograph on *Road Legis-*

lation for the American State advocated the desirability of paying all road taxes in money rather than in labor. At that time the labor tax was almost universally employed throughout the Union and its evils were just becoming apparent to students of road administration. It was destined to require a great many years of experience to convince the general public of the necessity of the cash system.

In the bulletin already noted Mr. Maurice O. Eldridge discusses the labor tax in connection with the subject of improved highways. At that time, 1904, twenty-five States had the statute labor tax, while eleven other States levied a poll tax payable in labor. In other words, some form of statute labor taxation existed in thirty-six States. It is a significant fact that only 6.15 per cent of the roads were improved in the statute labor States, while 18.39 per cent were improved in States where no such taxes were levied, thus indicating that the statute labor system had far outlived its usefulness from the standpoint of permanent highway improvement.

In the third place no comparative study of road legislation and administration would be complete without special reference to the very important subject of State aid as a definite plan of permanent highway improvement. While in reality this is a logical division of the general question of finance it has assumed such large proportions in recent years as to merit separate treatment. It will be recalled that prior to the coming of the railroad to Iowa, the Territory, and later the State, took a very active interest in the laying out, opening, and maintaining of public highways. What was true of Iowa in pioneer days has been quite generally true of all the States before the era of railroad building. It has already been pointed out that this was a logical development, because at that time highways were looked upon not merely as a local convenience, but as a means of transportation for long distances in large sections of the country where water transportation was impossible or at least impracticable.

The first result of railway transportation was to relegate the whole question of roads to the local units of government from the standpoint of both finance and administration. In recent years, however, it has come to be more obvious that the railroad at best can only supplement and not take the place of wagon roads. When it is remembered that at the present time there are approximately ten miles of wagon road to every mile of railroad and that practically all produce must be hauled over wagon roads before being transported by rail, it is very evident that the whole system of transportation, considered as a unit, is efficient only in proportion to the improvement of the public highways. Thus, if it is vital to the economic interests of the country to

New Mexico	15,326	0.12	12	2	0	0	0	2	0.01	35,457.56	130,194.00	.....	.....	.....	165,651.56	10.80	0.84
New York	73,798	1.54	98	3,692	2,184	0	0	5,876	7.96	2,881,268.99	1,754,785.83	.....	.....	.....	5,692,514.82	77.05	0.79
North Carolina	49,763	1.00	38	422	399	438	0	1,259	2.52	624,380.78	734,306.45	.....	.....	.....	1,358,687.23	27.30	0.71
North Dakota	59,332	0.84	5	205	7	0	0	212	0.35	d456,130.22	e94,210.50	.....	.....	.....	550,340.72	9.28	1.72
Ohio	69,439	1.79	59	16,159	7,160.5	140.5	0	23,460	33.78	d3,932,563.97	e929,766.00	843,753.64	.....	.....	5,706,083.61	82.17	1.37
Oklahoma	43,551	1.10	9	0	0	0	0	0	0	d447,319.59	e327,456.00	.....	.....	.....	774,775.59	17.79	1.94
Oregon	34,258	0.36	12	2,235	209	145	0	2,589	7.55	649,717.97	.....	.....	.....	.....	796,375.97	23.24	1.92
Pennsylvania	99,777	2.21	63	0	2,161	0	0	2,161	2.10	d4,759,499.16	.....	.....	.....	.....	4,887,265.68	48.98	0.77
Rhode Island	2,361	2.24	181	774.5	247	0	0	1,021.5	43.26	297,414.71	.....	.....	.....	.....	376,812.16	171.44	0.94
South Carolina	41,830	1.30	32	179	69	1,630	0	1,878	4.48	334,081.90	411,619.60	.....	.....	.....	745,701.50	17.82	0.55
South Dakota	59,295	0.70	7	147	4	0	0	151	0.25	d268,722.57	e114,560.50	.....	.....	.....	383,283.07	6.46	0.95
Tennessee	48,989	1.17	41	2,511	1,774	0	0	4,285	8.74	386,013.85	892,635.75	343,127.55	.....	.....	1,621,777.15	33.16	0.80
Texas	121,409	0.46	25	167	1,909	52	0	2,128	1.75	1,607,216.70	e1,594,545.00	936,395.79	.....	.....	4,138,157.49	34.08	1.35
Utah	7,090	0.08	39	597	11	0	0	608	8.57	135,210.78	60,390.00	.....	.....	.....	218,675.78	30.84	0.79
Vermont	14,521	1.58	23	1,672.5	281	0	0	1,953.5	13.45	440,016.12	.....	.....	.....	.....	567,397.33	29.07	1.65
Virginia	51,812	1.29	35	720	755	125	0	1,600	3.08	687,751.06	.....	.....	.....	.....	687,751.06	13.27	0.37
Washington	31,998	0.48	16	1,928	48.5	0	0	1,976.5	6.17	1,344,842.19	91,228.00	.....	.....	.....	1,436,070.19	44.88	2.77
West Virginia	26,178	1.06	36	26.5	217	11	0	254.5	0.97	d587,870.28	e305,415.00	.....	.....	.....	893,985.28	34.12	0.93
Wisconsin	63,593	1.17	33	9,900	733.2	0	0	10,633.2	16.72	d1,924,025.88	e257,236.50	.....	.....	.....	2,181,262.38	34.30	1.05
Wyoming	10,447	0.10	8	0	0	153	0	153	1.46	f324,475.73	e21,456.00	.....	.....	.....	345,931.73	9.45	1.04
United States g	2,151,570	0.73	35	108,233	38,622	6,807	0	153,662	7.14	53,815,387.98	19,818,236.30	3,530,470.93	2,607,322.66	77,771,417.87	37.07	1.05	

^a This column includes property taxes and poll taxes payable in cash. In some States, however, property taxes may be worked out, and where such is the case reference has been made to the explanatory footnote *d*. It has been impossible to ascertain to which such taxes were actually paid in labor instead of in cash.

^b This column includes labor taxes and poll taxes payable in labor. In some States, however, the statutes permit the payment of labor taxes in cash, and where such is the case reference has been made to the explanatory footnote *e*. It has been impossible to ascertain what part of these taxes were so paid.

^c One-half the cost of road construction and repair in the District of Columbia is paid from Congressional appropriation, the other half by the District out of the general revenues from taxation of property.

^d Part of this amount was paid in labor instead of in cash, as provided for by law in this State. (See footnote *a*.)

^e Part of this amount was paid in cash instead of in labor, as provided for by law in this State. (See footnote *b*.)

^f Of this amount \$250,000 was expended for roads in Yellowstone National Park. This sum was appropriated by Congress and expended under the direction of a United States Army engineer.

^g Exclusive of Indian Territory, Alaska, and island possessions.

have one mile of our transportation system constructed of steel and be put in the best condition that money and science can afford, is it not vastly more important to have the remaining nine miles of the system improved and maintained on a reasonably efficient basis? The recognition of this important principle is, in the last analysis, the foundation of the good roads movement of the present day and of the accompanying policy of State aid.

New Jersey was the first State in the Union to adopt the sys-

TABLE II
APPROXIMATE ROAD EXPENDITURES, 1911

State	State Aid	Local Bond Issues (a)	Local Revenues (*)	Total
Alabama	\$ 154,000	\$ 2,330,000	\$ 1,000,000	\$ 3,484,000
Arizona	150,000	.....	175,000	325,000
Arkansas . . . .	.....	.....	2,450,000	2,450,000
California	2,067,500 (b)	1,500,000	3,500,000	7,067,500
Colorado	162,000	.....	1,000,000	1,162,000
Connecticut	2,000,000 (*)	.....	2,275,000	4,275,000
Delaware	30,000	300,000	100,000	430,000
Florida . . . .	.....	755,000	750,000	1,505,000
Georgia . . . .	.....	.....	2,500,000	2,500,000
Idaho	53,000	.....	500,000	553,000
Illinois	65,000	.....	5,000,000	5,065,000
Indiana . . . .	.....	.....	4,500,000	4,500,000
Iowa . . . .	.....	.....	3,550,000	3,500,000
Kansas	6,500	93,356	1,500,000	1,599,856
Kentucky . . . .	.....	.....	2,500,000	2,500,000
Louisiana	132,354	.....	1,000,000	1,132,354
Maine	250,000	.....	2,000,000	2,250,000
Maryland	1,250,000	.....	1,000,000	2,250,000
Massachusetts	1,000,000	.....	2,500,000	3,500,000
Michigan	250,000	2,216,000	3,500,000	5,966,000
Minnesota	79,300	.....	2,000,000	2,079,300
Mississippi . . . .	.....	1,130,000	2,000,000	3,130,000
Missouri	300,000	.....	2,500,000	2,800,000
Montana . . . .	.....	.....	500,000	500,000
Nebraska . . . .	.....	.....	1,000,000	1,000,000
Nevada . . . .	.....	.....	50,000	50,000
New Hampshire	375,000	.....	1,000,000	1,375,000
New Jersey	500,000	.....	4,500,000	5,000,000
New Mexico	100,000 (*)	.....	200,000	300,000
New York	5,000,000 (*)	.....	7,000,000	12,000,000
North Carolina	5,000	2,500,000	2,000,000	4,505,000
North Dakota . . . .	.....	.....	1,000,000	1,000,000
Ohio	600,365	.....	6,000,000	6,600,365
Oklahoma	5,000	.....	1,500,000	1,505,000
Oregon . . . .	.....	1,500,000	2,500,000	3,500,000
Pennsylvania	4,000,000	.....	7,500,000	11,500,000
Rhode Island	97,000	.....	500,000	597,000
South Carolina . . . .	.....	100,000	1,000,000	1,100,000
South Dakota . . . .	.....	.....	500,000	500,000
Tennessee . . . .	.....	1,400,000	2,500,000	3,900,000
Texas . . . .	.....	1,600,000	6,000,000	7,600,000
Utah	355,750	.....	500,000	855,750
Vermont	450,000	.....	1,000,000	1,450,000
Virginia	300,000	2,454,000	1,250,000	4,004,000
Washington	900,000 (*)	.....	2,000,000	2,900,000
West Virginia . . . .	.....	625,000	1,000,000	1,625,000
Wisconsin	390,000	.....	3,000,000	3,390,000
Wyoming	10,000	.....	500,000	510,000
Total	\$21,037,769	\$ 18,503,356	\$101,750,000	\$141,291,125

* Estimated.

(a) Other local bond issues, but information lacking.

(b) Just begun expenditure of \$18,000,000 state bond issue for constructing state roads.

tem of State aid. At that time (1891) practically all road work throughout the entire Union was in the hands of local officials, who could not possibly possess expert knowledge and the result was that the whole system was wasteful and inefficient. Between 1891 and December 31st, 1910, the various State aid appropriations in New Jersey amounted to \$3,059,882.70, with the result that 1,562 miles or more than ten per cent of the roads of that State were improved.

Other States have rapidly followed the example of New Jersey. In fact the progress has been so phenomenal that at the present date out of the forty-eight States in the Union, thirty-seven have adopted State aid in one form or another. During the year 1911 Alabama, Oklahoma, South Dakota, and Wyoming enacted State aid laws. Mr. Page is authority for the statement that at the present time nine out of the eleven remaining States are seriously considering this same question.

It should be noted, however, that State aid does not always consist in money. Some States appropriate money for that purpose, others supply expert engineering assistance, others provide convict labor in some form, and still other States provide a combination of money aid, expert assistance, and convict labor. Georgia is perhaps the leading example of State aid in the form of convict labor. At the present time nearly five thousand convicts are at work on its roads. Illinois operates a rock crushing plant with convict labor, furnishing crushed stone to the various counties throughout the State. A similar plan is followed in California. Arizona, California, Colorado, Louisiana, Maryland, Michigan, Missouri, New Mexico, and Virginia provide both convict labor and money aid; while Wyoming, Oklahoma, and Illinois furnish convict labor and engineering assistance. The remaining States which have adopted the policy of State aid namely, Alabama, Connecticut, Delaware, Iowa, Maine, Massachusetts, Minnesota, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Utah, Vermont, Washington, and Wisconsin give money aid, together with advice and engineering assistance.

Money aid is generally the direct result of some form of State taxation. The policy of issuing bonds for this purpose, however, has already been adopted in a group of States. There is a bond issue of \$18,000,000 in California, \$4,500,000 in Connecticut, \$6,000,000 in Maryland, \$2,500,000 in Massachusetts, \$1,000,000 in New Hampshire, \$50,000,000 in New York, making a total of \$82,000,000. It may be stated that this plan of raising funds for the building of roads has become well established. Indeed at the present time Rhode Island, Colorado, Alabama, and Pennsylvania are agitating the question of providing bond issues, which if adopted will amount to the enormous sum of \$110,600,000.

A more detailed study of the important subject of State aid may be made by consulting Table III which gives statistical data for all of the thirty-seven States which have adopted the policy. This information was compiled by the Office of Public Roads of the United States Department of Agriculture at Washington, and gives the date when the original law was adopted; the total expenditures for State aid up to December 31, 1910; appropriations for 1911; total expenditures up to December 31, 1910, for so-called trunk line roads and the 1911 appropriation for the same purpose, the distribution of funds between State, county, and township; convict labor employed both in road building and in crushing stone; the total mileage both of ordinary and improved roads; the average cost per square yard of macadam, gravel, and bituminous roads; and finally, the names of the State highway commissioners or engineers. While the information thus given is not absolutely accurate, especially for those States where data had to be secured through correspondence with township officials, it is nevertheless the best that is available at the present time. The tabulation has been carefully prepared and is worthy of thoughtful study on the part of the reader.

Closely connected with the subject of State aid is the vital question of expert administration, and in fact of expert service of any line. As already noted expert assistance and advice is in reality one phase of the general policy of State aid. Reduced to its lowest terms the road and bridge question, judged from the standpoint of political science, is one of efficient centralized administration and from the standpoint of engineering science requires expert knowledge of the methods of dealing with various materials of construction to the best advantage. Indeed, the good roads movement has now reached a stage where as a problem of both economics and political science on the one hand and of the fundamental principles of engineering on the other it demands the service of the best trained minds.

During the last decade perhaps no point has received greater emphasis in all intelligent discussion of the road question than the desirability, in fact the absolute necessity, of a more expert system of supervision and control. This principle has been recognized again and again by the Governors of Iowa and the various good road associations, as well as by the State Highway Commission. It has been discussed in every State of the Union where comprehensive reports have been submitted dealing with the road and bridge question.

As already observed, Professor Jenks, in his monograph written nearly a quarter of a century ago, referred to the wastefulness of the old decentralized system of road administration and emphasized in that connection the importance of vesting more authority in larger units of government. "The general custom,"

TABLE III

STATE-AID ROADS—SHOWING AMOUNTS APPROPRIATED AND PROPORTIONS PAID, ETC.

STATE	Original Law Adopted	STATE APPROPRIATIONS AND EXPENDITURES				PROPORTIONS PAID STATE-AID ROADS			CONVICT LABOR EMPLOYED		ROAD MILEAGE				AVERAGE COST PER SQUARE YARDS (CENTS)			NAME OF STATE HIGHWAY COMMISSIONER OR ENGINEER
		STATE-AID ROADS		TRUNK-LINE ROADS		By State	By County	By Township	In Road Building	In Crushing Rock	Total Mileage in State	Total Mileage all Improved Roads in State	Completed Under State Aid to December 31, 1910	Trunk Line Roads Completed up to December 31, 1910	Macadam	Gravel	Bituminous	
		Total Expenditures up to December 31, 1910	Appropriation for 1911	Total Expenditures up to December 31, 1910	Appropriation for 1911													
Alabama	1911		154,000.00			50	50											W. S. Keller, Engineer
Arizona	1909																	J. B. Girard, Engineer
California	1905			403,300.00	135,000.00 (b)				Yes	Yes	48,069	8,587.75						A. B. Fletcher, Engineer
Colorado	1907	50,000.00		162,000.00	33%	66%					29,693	330.5			20			W. S. Wiley, Engineer
Connecticut	1895	4,709,572.29		(c)	(d)			(d)			12,543	3,030.54	800.97 (e)					E. H. MacDonald, Commissioner
Delaware	1903 (n)	177,871.44	30,000.00		(f)	50					3,000	186.79						Francis A. Price, Engineer
Florida									(f)								Sand-Clay	
Georgia	1908									4,618 (g)	82,232	5,978			1,638.75	1,200.00	425.75	A. E. Robinson, Engineer
Idaho	1905		53,000.00			100					18,403	510.5						A. N. Johnson, Engineer
Illinois	1903	280,000.00	65,000.00			(h)	(h)	(h)			94,141	8,911	235					W. S. Gearhart, Engineer
Iowa	1904	(i)	6,500.00 (j)								2,504.1				50	25	70	G. Lombard, Engineer
Kansas	1910		132,451.86 (k)			50	50		Yes		25,528	2,703.06	640.92	7.99	64.6			L. H. Harrison, Commissioner
Maine	1901	600,749.38 (l)	250,000.00	39,779.74 (m)	2/3-3/7			1/3-4/7	Yes	Yes	16,773	2,142.9	183	145	47			W. W. Crosby, Engineer (n)
Maryland	1898	1,431,102.00	200,000.00	8,853,728.34	1,050,000.00						17,372	1,072.61	730		(r)	(r)	(r)	H. Parker, Chairman
Massachusetts	1902	6,041,785.75 (o)	500,000.00 (p)			75 (q)	25		Yes	Yes	69,104	1,518.89	730					P. F. Rogers, Commissioner
Michigan	1905	510,000.00 (a)	250,000.00			33%	66%		Yes	Yes	79,323	5,416.85		(u)	55	10-20		W. W. Olesky, Engineer
Minnesota	1905	200,849.00	79,000.00	(v)		50	(w)	(w)			107,923	1,756.25		(x)	18	37	1.20	Carroll Hill, Engineer
Missouri	1907	550,000.00	300,000.00 (v)			(x)	33%	66%	10	None	15,116	1,148.48	238		75	40	1.12-1.30	H. C. Noll, Engineer
New Hampshire	1903	706,605.28	125,000.00	497,928.86	250,000.00						13,842	3,377.86	1,562.204					E. A. Stevens, Commissioner
New Jersey	1901	3,059,882.70	105,000.00			(a')			(b')		16,920	104	225					C. D. Miller, Engineer
New Mexico	1903																	C. Gordon Ross, State Supt. Highways
New York	1898										48,285	2,313						T. B. Atkinson, Engineer
North Carolina	1901	8,750.00 (e')	5,000.00 (e')															Jas. R. Marker, Commissioner
Ohio	1906	(d')	600,365.92	(Note)		50	25	15 (e')			98,861	24,106	199					Sidney Suggs, Commissioner
Oklahoma	1911																	E. M. Bigelow, Commissioner
Pennsylvania	1903	9,020,180.11	1,000,000.00 (f')	None	None	75	12%	12%	None	None	87,387.24	3,364.76	784.40	None	1.20		1.38	S. H. Lea, Engineer
Rhode Island	1902	1,898,010.11	97,000.00			100					2,361	1,021	222.6		75			William Spry, Commissioner
South Dakota	1911		(g')															C. W. Gates, Commissioner
Texas	1909	100,631.00	355,750.00 (h')			50-75	50-25				9,320	1,018	125.42	(i')				P. M. Johnson Wilson
Vermont	1892	1,389,706.00	400,000.00			50		50			14,418	2,650.63	697.13					W. R. White, Engineer
Virginia	1905	706,513.91	300,000.00			50	50		Yes	Yes	43,399	1,902.75	503.45					W. O. Hotchkiss
Washington	1905		(j')															A. J. Parshall, Engineer
West Virginia	1907	(k')				1/5 (l')	4/5											
Wisconsin			390,000.00						Yes									
Wyoming	1911		10,000.00 (m')															

- (a) A levy of 25¢ on \$100 in counties covered in proposed system of territorial highways, and 5¢ on \$100 in counties not so covered.
- (b) For the fiscal years July 1, 1911, to July 1, 1913; now spending \$18,000,000 bond issue for trunk line roads.
- (c) Included under state-aid.
- (d) State pays three-fourths in towns with Grand List of over \$1,250,000, and 5/8 in towns with Grand List less than that amount.
- (e) This includes trunk lines.
- (f) The authority of law exists for working part of state convicts on roads. Ad contract not taken of this law as yet.
- (g) Of which \$2,278 are state convicts and 2,340 are county convicts.
- (h) State furnishes free stone, machinery and engineering inspection. Township pays remainder.
- (i) The State College at Ames, acts as State Highway Commission.
- (j) No specific appropriation is made for the State Engineer's office, but the office is authorized and expense heretofore had been carried by State Agricultural College out of its general fund.
- (k) Supplemented by convict labor and surplus revenues ofyster commission and the fish and game commission.
- (l) Includes joint fund of \$2,132.58 expended on trunk lines.
- (m) The total expenditures for trunk lines to December 31, 1910, \$48,000, as follows: State appropriation, \$39,779.74; joint fund, \$2,132.58; and subscription, etc., \$24,010.07.
- (n) A Highway Division of the State Geological Survey constituted the Highway Commission to May 1, 1908, when the State Roads Commission was appointed, then to June 1, 1910, but the Commissioners operated the State aid and the state road

laws respectively. Since June 1, 1910, entire charge vested in the State Roads Commission.

- (o) Expended for construction.
- (p) For construction. Appropriation for maintenance not yet made; will be supplemented by automobile licenses amounting to about \$100,000.
- (q) In towns under \$1,000,000 valuation, state-aid in the amount of \$25,000 will be given in 1911. In towns of \$250,000 and in small towns contributing amounts equal to that appropriated by the State.
- (r) Gravel, 4" thick, cost 11¢; 5" thick, 14¢ per square yard. Local stone macadam roads, 4" thick, cost 39¢ per square yard; 5" thick, 50¢; trap rock macadam roads, 4" thick, cost 57¢ per square yard; 5" thick, 74¢; bituminous gravel roads, 2" thick, cost 37¢ per square yard; bituminous macadam 2" thick, cost 48¢ per square yard.
- (s) Amount to July 1, 1910, with \$150,000 additional for fiscal year ending July 1, 1911.
- (t) The state contributes amounts according to the type of road constructed, ranging from \$250 to \$1,000 per mile; during first 5 years of state-aid state paid 25.6% of state-aid roads built.
- (u) No trunk lines, except small sections—10 miles in all.
- (v) Approximately.
- (w) The county, township, or abutting property owners pay the other 50 per cent.
- (x) Varies from 20¢ to \$3.00 for every \$1.00 locally raised.
- (y) At the county penitentiaries of Essex, Hudson and Mercer counties.
- (z) Appropriation raised by tax of 1 mill on each \$1.00 of taxable property in the territory (Roads paid for either wholly or in part by the Territory).
- (a')

orders of the Road Commission. The Territorial Road Commission consists of the Governor as chairman, the Commission of Public Lands, and the Territorial Engineer.

- (b') Territorial convicts are worked on the roads.
- (c') This is for advice and engineering assistance through the Geological and Economic surveys.
- (d') In 1909 Good Roads Experiment Station was established at Hiramark. Convict labor was to be used on the work undertaken and no fixed appropriation was made.
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said Professor Jenks, "seems to be to make small districts the unit of administration. In the southern states, where the county is the unit, the county authority, as a rule, limits its duties to dividing the county into road districts and appointing over each district an overseer. Of course this gives no *system* of roads more than does the sole supervision by township authorities. In the New England states, and those settled in large part from New England, the township system is found, a system which in itself prevents unity of administration, unless some higher authority is especially empowered for this purpose, a provision very seldom made. This local administration under which ever form it is found would, of course effectually prevent any thorough classification of the roads." Of course the "higher power" to which reference is made is none other than that of the State, or the State highway commission as now understood.

Space will not permit of any detailed comparative study of the question of expert centralized administration. A thorough study of this one subject would require a special monograph. The principles of State aid, expert engineering assistance, and efficient administration, which taken together represent the very essence of the good roads movement, are so firmly established and so universally endorsed by thinking men that at this time only brief reference will be made to the system employed in three or four representative States.

The State Highway Commission of California early recognized the necessity of possessing a larger measure of supervision and control in order to accomplish the best results. In a recent report of the State Engineer may be found the following statement: "It was noted by those who observed the situation of a new department of this nature, that it would be necessary to concentrate more power into the department, that it might have proper effectiveness; that is to say, the powers of the various boards of managers to award contracts, purchase materials, to make payments on day labor work, and hire the day laborers, as they were enabled under the law of 1907, gave unsatisfactory results, and it was therefore necessary at the session of 1909 of the California legislature to grant the Department of Engineering those powers of buying, awarding contracts, and doing all things necessary for the construction of the various works of the State, and after their construction to turn them over to the respective boards or institutions for which they were constructed. . . . It is but reasonable to suppose that, where the work is spread among a number of boards, you cannot get uniformity, and you cannot get the best results, nor can you get the best economy."

The State Highway Commission of Illinois emphasizes the ne-

cessity of putting road work upon a systematic business basis. The following statement appears in their report:

“This cannot be done until it is made one man’s business in each locality to do this work all the time; not to have it done at odd times as personal convenience may dictate. Those who have given the question any close attention generally agree that it is no exaggeration to say that twice as much road work can be done under a business-like system and at no greater cost than is incurred by present methods. To get such results the work must be done when needed and in the right manner. The present law affords full opportunity to get such results, in that it is within the power of any board of road commissioners to appoint a superintendent who may have entire charge of the work and who should be on the work all of the time, devoting his entire attention to it. Where this has been tried and put into effective operation, the results have been nothing less than marvelous. . . .

“It must be evident that no system of improved roads that will answer present needs can be built or maintained under township units; the township unit is too small, and the fund that can be raised therefrom inadequate for the work.

“There should be larger areas of control in order to plan and construct a system of roads such as is needed in practically every community. The county unit is the one that must naturally suggest itself, and with some exceptions would answer more nearly the conditions necessary for the development of a system of main roads than any other areas bounded by present political boundaries.”

In the northeastern States where the township is the important unit of local government it is instructive to note that the State Highway Commission of Maine believes that the township rather than the small sub-district should be the unit for actual highway work, thus endorsing the principle of the so-called Anderson law passed in Iowa in 1902. The following statement is significant: “We would like to see every town elect one road commissioner and give him authority over the roads, subject of course to general supervision by the selectmen, but this supervision only to extend to passing upon the expediency of unusual expenditure for specific purposes, such as permanently improving certain sections of road, and the general character of the improvement. This settled, the road commissioner should be left unhampered to carry out the work according to his own best judgment.”

Finally, Wisconsin, the banner State in the field of social, political, and economic reform during the last decade, has taken a very positive stand on the subject of expert road administration. A Special Joint Committee on Highways in the legislature made an exhaustive investigation and submitted their report in 1910. The problem of distributing authority among the differ-

ent units of government — State, county, and local — receives special attention by the committee. In this connection their report is a very sane, well balanced document, recommending centralized power and authority only when necessary and reserving to the local units of government powers which ought to be placed under their jurisdiction. The following statements are instructive:

“The committee is of the opinion that the county and not the town should be made the unit, and the people of our state universally recognize this fact: that the town alone is too small and weak to do effective work; and that better results can be obtained by accepting the county as a unit and adopting a county system. The county system, with authority vested in the county board similar to that contemplated in this bill has given satisfaction where tried.”

Speaking of the work of drafting the highway bill the Committee reported as follows:

“First of all there appeared to be very little, if any, dissent from the proposition that the initiative in the matter of road construction should be left with the town; that the town and county should work together, thus making the county the working unit; it being agreed that the town is too small and the state too large for that purpose. The committee also found an equal unanimity upon the provision that the town, county and state should bear the burden of the cost of construction in approximately equal shares.”

Even a brief study of the problem of State aid and centralized administration would be incomplete without calling attention to the bearing of this program of reform upon the fundamental principles underlying our democratic institutions. The reader is well aware of the fact that the old-time objection to a more centralized system of supervision and control was that it destroys local self-government. This argument has been advanced over and over again not only in Iowa, but in every State of the Union, and the fact that it is frequently successful in preventing real progress is well known to the friends of the good roads movement. This being true, it is important to ascertain whether in reality the argument rests on solid foundations or merely consists of so much verbiage.

It is a well established principle of democratic government that representation is the only logical and just basis of taxation. This is true whether the unit of government concerned is the State, county, township, city, or any other minor sub-division. To the extent that money is voted and levied in a civil township it ought to be expended in that township. Otherwise, there is an absence of either pure democracy or representative government. To the extent that money is levied by the authority of the

county board of supervisors or any similar body it should be expended by the county under the supervision and control of the county. Finally, money levied by the authority of the State legislature and paid by the people of the whole State should be expended under the supervision and control of the State. Otherwise the very fundamental principles of representative government are ignored. Following this course of reasoning it is obvious to any thinking man that money secured either by the levy of State taxes, or by the issue of State bonds, or in any other way should not be expended under the supervision and control of either township or county authorities. To permit such a practice would be to grant to officers in one township or county the right to appropriate money which had been raised in remote sections of the State.

A thoughtful, comparative study of road legislation and administration, therefore, leads to three conclusions: first, the problem of building permanent roads and constructing the best type of bridges is one of expert engineering science on the one hand and of expert political administration on the other, requirements which can be met only by the larger units of government, namely, the county and the State; second, judged from the economic standpoint the amount of revenue required to carry on these undertakings is so large as to demand a more extensive taxable area, in some cases the county, in others the State; and finally, as a logical result of these facts, if the time honored principles of representative institutions are to prevail, supervision and control should go hand in hand with dollars and cents appropriated and expert services rendered.

In other words, authority over the construction and maintenance of roads and bridges must be a State function in proportion to the amount of money levied on the people of the entire State and paid out of the State treasury. In the same way supervision and control of roads and bridges should remain a county function or a township function in proportion to the amount of money raised in those respective jurisdictions. Democratic institutions are not determined primarily by the size of the political unit, but rather by the principle of responsible representations and the judicious expenditure of public funds.

Finally, the reader will recall the fact that one of the five important standpoints from which the subject of road legislation must be judged is that of the economics of transportation. This again offers up a practically unlimited field for investigation. Up to date good road enthusiasts and representatives of the press have indulged in much hasty generalization along this line, but very little scientific data has been collected.

First of all it should be recognized that the problem is a complex one, involving careful research work in the separate fields

of political, economic, and engineering science. Indeed, the writer is much impressed with the fact that judged from the standpoint of research the economics of transportation is a virgin soil where the labors of the civil engineer and political economist will always be supplementary and interdependent. This is true whether the problem is approached from the standpoint of public expenditure on the one hand or traction resistance on the other.

In Iowa it has been frequently alleged that at least half of the revenue expended on roads and bridges is absolutely wasted largely as a result of the present careless and inefficient system of highway administration. This estimate was made more than a quarter of a century ago by Governors Gear and Sherman, and it is now being repeated almost daily through the press of the State by business men, lawyers, civil engineers, and practical road builders, in fact by men in almost every walk of life. Yet if this is true it means that the commonwealth of Iowa is wasting \$3,500,000 annually, or more than double the amount that is now being expended to support the cause of higher education.

In order to determine the actual amount of the economic waste resulting from the high traction resistance of our roads on the one hand and the loose system of administration on the other, it is necessary to study the various materials of construction, analyze the laws of strains and stresses, carry on experiments for ascertaining the cost of hauling produce on different road beds and up difficult grades, and consider numerous other closely allied problems of an engineering and economic character. The cost of structural steel, concrete and other materials of construction, also the wages of labor are among the economic questions which the highway engineer must always have in mind when preparing his plans and specifications.

In conclusion the writer will state that he is preparing an Applied History Essay on The Problem of Road Administration in Iowa, the purpose of the same being to present a comprehensive historical analysis of Iowa road legislation in connection with a brief comparative study of the experience of other States. The historical and comparative method of research is the only true basis of scientific reform and therefore of practical legislation. This being true an Applied History Essay — in other words the application of the historical method to the solution of this important problem — should reveal: first, the extent to which the fundamentals of the good road movement are rooted in the past; and second, the experience of other States presented with reference to the growth of State highway commissions, the proper jurisdiction of the township and county respectively in the work of road administration, the county highway engineer, the motor vehicle tax and closely allied topics.

In this volume the author has endeavored to give a careful

historical statement of the facts of Iowa road legislation and a synopsis of the present road lands in every State of the Union. In the Applied History Essay to be published separately these comparative and historical facts will be interpreted from the standpoint of the general laws of social evolution, thus forming a necessary and logical basis of constructive reform.

CHAPTER IV

CONCLUSION

The general importance of road and bridge legislation is indicated by the amount of money being annually expended for those purposes in the counties and civil townships of Iowa. Data along this line does not exist except for the period 1870-1882 and 1903-1911. Prior to 1860 the law did not require that the amount of taxes raised for road and bridge purposes to be certified by the county authorities to the Auditor of State. The Revision of 1860, however, provided for the filing of such reports, but apparently the law in that respect was not complied with until 1870. We are, therefore, unable to ascertain the amount of revenue levied for road and bridge purposes prior to that time.

Table IV gives the road and bridge tax for each year from 1870 to 1882 inclusive. During that period the levy for road purposes was made by the civil townships, and that for bridge purposes by the county board of supervisors. It appears that the tax raised for the building of bridges was \$618,884.11 in 1870, and remained practically stationary until 1875, when the amount increased to \$839,668.79. In 1876 and 1877 the bridge tax passed beyond nine hundred thousand dollars, but in 1879 the amount was reduced to \$764,747.12, due in a large measure to the contraction of the currency caused by the resumption of specie payments. In 1882 the reader will note that the bridge tax was \$1,089,294.92. Whether it was less than that amount at any time during the following twenty year period cannot be determined since all other taxes are lumped together in the report of the Auditor of State, no separate item appearing for bridge purposes.

The amount of road tax, it appears, was substantially less than the levy for bridge purposes. It should be suggested, however, that statistics along this line are not absolutely reliable. During the period under consideration a very large part of the road tax was paid in labor rather than money, and no account of this work was kept by county authorities and submitted to the Auditor of State. In 1870 the road tax, as indicated by Table IV, was only \$268,137.46, but increased gradually until it reached

\$532,732.27 in 1877. For reasons already suggested this amount was reduced to only \$394,332.30 in 1879.

TABLE IV

ROAD AND BRIDGE REVENUES, 1870-1882

Date	Bridge Tax	Road Tax
1870	\$ 618,884.11	\$ 268,137.46
1871	695,781.74	348,092.82
1872	705,445.61	360,700.95
1873	672,300.47	414,610.48
1874	680,255.29	458,488.27
1875	839,668.79	443,449.48
1876	952,948.10	438,206.88
1877	946,788.08	532,732.27
1878	856,338.81	543,676.04
1879	764,747.12	394,332.30
1880	828,442.40	447,047.00
1881	970,238.08	486,454.36
1882	1,089,294.92	477,889.95

Table V gives the bridge and road tax for the years 1903 to 1911, inclusive. It will be observed that the road tax at this time was partly a county and partly a township tax. Indeed, it will be recalled that a county road fund was created for the first time in 1884, largely as a result of the agitation which culminated in the State Road Convention held at Iowa City in March, 1883. This table reveals an enormous increase, both of road and bridge taxes, especially the former. The bridge levy which had been only \$618,884.11 in 1870 had increased to \$1,628,720.88 in 1903, \$2,178,028.09 in 1907, and \$3,059,319.68 in 1911.

TABLE V

ROAD AND BRIDGE REVENUES, 1903-1911

DATE	BRIDGE TAX	ROADS	
		COUNTY TAX	TOWNSHIP TAX
1903	\$1,628,720.88	\$547,309.92	\$2,283,129.65
1904	1,947,423.53	559,409.42	1,749,395.23
1905	1,923,431.81	518,535.71	1,773,304.08
1906	1,967,546.02	520,779.54	1,804,483.83
1907	2,178,028.09	556,173.16	1,909,988.03
1908	2,180,381.45	575,374.39	1,890,573.04
1909	2,563,193.78	602,389.31	1,903,479.64
1910	2,756,659.45	618,666.52	2,123,720.19*
1911	3,059,319.68	724,760.74	2,754,621.27**

* Includes delinquent Road Tax of \$101,623.72.

** Includes delinquent Road Tax of \$110,452.61.

The enormous increase of road taxes was no doubt the result of two important causes: first, the payment of all property road taxes in cash provided for by the laws of 1902, and second, the natural growth of expenditures along this line made necessary

by the economic progress of the State, and more especially the good road movement itself. It will be observed that the county levy for road purposes increased from \$547,309.92 in 1903 to \$724,760.74 in 1911. By far the largest road tax, however, was levied in the civil townships, which tax increased from \$1,749,395.23 in 1904 to \$2,754,621.27 in 1911, including, however, \$110,452.61 of delinquent road tax. Obviously the township levy of \$2,283,129.65 for 1903, as shown by the report of the Auditor of State, includes the tax for more than a year, as a logical result of the change from a labor to a cash system.

Reduced to its lowest terms, therefore, the State of Iowa was spending more than five millions of dollars for road and bridge purposes in 1909, and that enormous sum increased to \$7,066,386.02 in 1911, which includes the motor vehicle tax of \$527,684.33. Indeed, it may be reasonably assumed that the road and bridge tax of Iowa will never again represent a smaller sum than seven million dollars. Next to the levy for school purposes the road and bridge tax is now the heaviest burden placed upon the taxpayers of Iowa. If we are to expend more than seven million dollars for the support and maintenance of the public highways and the building of bridges, which sum will no doubt be greatly increased in the future, it is absolutely essential to have the supervision and control of this vast expenditure on a strictly business basis, and in accordance with the most scientific principles of Engineering and Economic Science.

After making a thorough historical study, therefore, of the road legislation of Iowa from 1834 to the present time, supplemented by a comparative investigation of the road laws of all the remaining States of the Union, the author is convinced that a road and bridge law drafted on the basis of the most successful experience, both in this and other States, should embrace the following fundamental principles:

1. The civil township should continue to be the unit of local government for the maintenance of the secondary, or township roads, which includes dragging them. With the exception of the short period from July 1, 1851, to February 2, 1853, when a county road supervisor appointed deputy road masters, the township has been primarily responsible for the actual supervision of road work, either directly or indirectly through the sub-district system or local road overseers. When we consider that by far the greater per cent of all roads will continue to be secondary roads, their supervision and control represent a substantial amount of authority vested in the hands of township trustees. Any scientific road law should recognize the important sphere of jurisdiction over roads which throughout practically the entire period of Iowa history has been exercised by the civil township.

2. With a large amount of money raised annually by the township for the maintenance of secondary roads, including the dragging of the same, it is evident that an efficient plan of administration should be devised for the intelligent expenditure of this fund. For this purpose a township road superintendent should be appointed by the township trustees, and approved by the county engineer. He should devote at least a large part of his time to the work, and be held directly responsible by the trustees for the condition of the township roads. He should make reports to the county engineer, and be subject to his supervision in the general features of road work.

3. The county is a unit of local government which supplies an important and necessary connecting link between the civil township on the one hand and the State on the other. It is a large enough taxable area to secure the necessary funds for building and maintaining the primary, or main traveled roads, the purchase of suitable road machinery and the construction of culverts and bridges. The history of Iowa road legislation has tended to emphasize these considerations. This being true, the contention frequently made that the road funds under the jurisdiction of the county board of supervisors should be relatively increased rests upon the solid foundation both of economic and engineering science.

4. With the constantly increasing amount of taxes levied in the counties for road and bridge purposes the necessity of having a trained county engineer, who should be an experienced road and bridge builder, becomes more and more apparent. Said engineer should be appointed by and made directly responsible to the county board of supervisors, in much the same manner that the township superintendent of roads is appointed by and made responsible to the township trustees. He should have some authority over the township superintendents. He should be required to make reports to the State Highway Commission and confer with it in the adoption of general standards for road work. The State Highway Commission should act in an advisory capacity for all roads except the so-called State aid roads, of which it should have full charge.

5. The present State Highway Commission should be granted larger powers and authority, and the appropriations for the support of the same ought to be substantially increased. In this connection a policy of State aid for the building and maintenance of permanent roads should be instituted and placed under jurisdiction of the Commission. The preparation of standard plans and specifications for permanent roads, bridges, and culverts, the collection and tabulation of data relating to the public

highways, the approval of all contracts involving the expenditure of State money, and the work of research and experimentation together with the publication of reports from time to time, constitute a large and necessary field of labor for a permanent State Commission. Indeed, it may be said that the State Highway Commission is the leader of the good road movement in a majority of the States of the Union.

6. Recent disclosures of loose and careless handling of bridge matters, both in the letting of contracts and the construction of the work, have proven the necessity for adequate bridge laws. Such laws should empower the State Highway Commission to establish standards of construction as a matter of public safety and should require all construction work to be done under the supervision of the county engineer.

7. Any permanent road that may be established, being of special value to the immediate community and of general interest first to the county and second to the State, it is believed that road improvement districts should be created for this purpose, and the cost of permanent roads apportioned equally, one-third to the road improvement district, one-third to the county and the remaining third to the State.

8. We would further suggest that all or at least a very large part of the present tax on automobiles should be retained in the State treasury, and used as State Aid Fund for the building and maintenance of permanent highways. Such a policy has already been adopted in a number of States and, in the judgment of the writer, is justified for at least two good reasons: first, the automobile has practically eliminated county lines for the main traveled county roads; and second, the rapid destruction of the road surface by heavy machines running at high speed has made the building and maintenance of permanent roads at large and increasing expense an imperative necessity.

9. All property road taxes should be paid in cash; and, in the opinion of many good authorities, the payment of personal or poll road taxes in money would produce more satisfactory results. Indeed, such a policy has already been adopted in a number of States.

10. The dragging of dirt roads, the building of permanent highways and the construction of culverts and bridges should all be placed on an efficient business basis, which can be done only by employing competent men and requiring that they give all their time to the work. In a word, the township superintendent of roads, the county road engineer and the State Highway Commission constitute the logical and necessary adminis-

trative machinery of the good road movement. The administration of roads by ex-officio boards has never produced, and from the very nature of things can never produce satisfactory results.

In this connection it is believed that if a State aid policy is adopted the governing body of the State Highway Commission might properly be changed from the State College as an institution, to a board of individuals composed of the Dean of Engineering, the Dean of Agriculture of the College, the President of the State Board of Education, and two competent business men of recognized standing to be appointed by the Governor. This would continue the present relation of the Commission to the College, which is highly desirable on account of the engineering advice, assistance and equipment available, on account of the facilities furnished by the College for carrying on the work economically, and because of the necessity of continuing the work free from political influences.

11. Finally the author would suggest that the supervision and control of public highways should be a township, county or State function in proportion to the relative amount of tax levied for that purpose by those respective jurisdictions. This conclusion is based on the time honored principle that taxation without representation is contrary to the spirit of all democratic institutions. In the last analysis there are only two classes of public highways: First, local township roads under the control of the township trustees and administered by a township road superintendent; and second, county roads under the jurisdiction of the county board of supervisors, the so-called State aid roads being simply those county roads that receive State aid, and are therefore subject to the joint supervision of county and State authorities.

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